INSTITUTIONAL RESEARCH CULTURE, TECHNOLOGY APPLICATIONS USE AND RESEARCH COMPETENCE OF LECTURERS OF KYAMBOGO UNIVERSITY IN UGANDA

SHALLON ATUHAIRE

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A DISSERTATION SUBMITTED TO THE DIRECTORATE OF RESEARCH AND GRADUATE TRAINING IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF EDUCATION IN POLICY, PLANNING AND MANAGEMENT OF KYAMBOGO UNIVERSITY

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DECLARATION

I Shallon Atuhaire affirm that this disertation titled “Institutional Research Culture, Technology Applications Use and Research Competence of lecturers of Kyambogo University in Uganda” is my own. It was strictly written in pursuance of a masters degree of Education in Policy, Planning and Management of Kyambogo University.

Signed..... Date……

Shallon Atuhaire

APPROVAL

This dissertation titled "Institutional Research Culture, and Technology Applications Use and Research Competence of Lecturers of Kyambogo University in Uganda" was developed under our supervision. We therefore, give our approval for its submission for examination.

Signature

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Dr. Wilson Mugizi (Ph.D) Date

Supervisor

Signature

…… …….

Dr. Joshua Kimata Kato (Ph.D) Date

Supervisor

DEDICATION

This dissertation is dedicated to my immediate family, especially my husband, Mr. Danison Taremwa, and our children; Darwin Taremwa, Phillipa Akampa, Tabitha Akandinda, and Martha Ayebare. Their unwavering love, care, encouragement, and prayers have been my relentless source of strength and provision in this journey.

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ACRONMYS AND ABBREVIATIONS

UK	United Kingdom
USA	United States of America
NCHE	National Council for Higher Education
TOC	Theory of Organisational Culture
TAM	Technology Acceptance Model
USE	Perceived Usefulness
EAS	Perceived Ease of Use
BIN	Behavioural Intentions
DES	Directorate of Education Standards
CFA	Confirmatory Factor Analysis
AVE	Average Variance Extracted
SAS	Statistics Analysis Systems
SPSS	Statistical Package for Social Scientists
STATA	Statistical Analysis System for Examining Biomedical Data
SmartPLS	Smart Partail Least Squares
HTMT	Heterotrait-Monotrait
ISBN	International Standard Book Number

ABSTRACT

This study explored how institutional research culture affects the research competence of lecturers at Kyambogo University, with a specific focus on the moderating role of technology application use. The specific objectives were to explore the impact of institutional research culture, evaluate the effect of using technological applications, and determine whether technology application use moderates the relationship between institutional research culture and lecturers' research competence. Employing a quantitative approach, the study adopted a correlational research design and gathered data from 192 academic staff members. Data analysis was conducted using SPSS and SmartPLS. The descriptive findings indicated that lecturers demonstrated high levels of research competence and technology use, while the institutional research culture was rated as moderate. Inferential analysis showed that both institutional research culture and technology application use had a significant positive impact on research competence. However, the moderating effect of technology use on the relationship between institutional research culture and research competence was negative and statistically insignificant. The study concluded that while institutional research culture plays a key role in developing lecturers' research competence, and technology use contributes positively, it does not significantly strengthen the effect of a supportive research culture. The study recommends that university leaders foster a strong research culture and provide capacity-building initiatives, especially in the use of technology for research. Additionally, institutions should consider adopting more customized technological tools based on the specific needs of their researchers.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

Research competence is increasingly becoming important worldwide due to the ever-changing research landscape that is driven by technological advancements, globalization, and new research methodologies (Niemczyk, 2018). Research competence enables professionals and researchers to plan independent research activities that are logical, integrating cognitive activity, objective, and oriented toward problem-solving (Prosekov et al., 2020). Nonetheless, in the developing countries of Africa, the research output of lecturers remains low as well as their overall scientific discourse (Nakijoba & Awobamise, 2023). Consequently, it becomes imperative to examine the research competence of university teaching staff who are in a number of studies synomously referred to as lecturers. This study, henceforth particularly assessed the influence of institutional research culture on the research competence of lecturers of Kyambogo University moderated by technology applications use.

1.1 Background

1.1.1 Historical perspective. Globally, lecturers' research competence remains a concern, with many struggling in areas such as originality, relevant skills, and technical expertise required among researchers in this century (Niemczyk, 2018). A number of lecturers are not effective communicators ane may not be able to publish in reputable journals. Consequently, are unable to meet the demands of research at a global scale (Winarno et al., 2017). For example, only 10 countries including China, Germany, the United States of America (USA), and a few other countries account for more than 87% of all academic publications worldwide, with the USA and

China alone contributing over 36% (Curcic, 2023). Limited research output has been linked by researchers to various factors, including insufficient research competence among researchers. In Africa for example, the pace of research is still low as seen at 1 per cent for decades (Marincola & Kariuki, 2020). In a study that engaged 38 scholars from 17 countries across the global with representatives from the South and North on the required research competence among scholars in education, it was reported that the research competences of many scholars were still inadequate (Niemczyk, 2018). In a study done in private institutions in South Africa, Davids (2022) reported that 71.7 per cent of academic staff considered themselves emerging researchers who needed research competence boosters such as training sessions and mentorship programmes to develop the much desired competences in research. In Northern African universities, a number of universities have positioned themselves as teaching universities with less priority given to research (Sawahel, 2017). Although Kenya was identified among countries with high research output (Nnadozie, 2017), Were et al. (2023) reported that issues of research misconduct are equally common in Kenya which indicates low research competence.

The National Council for Higher Education (NCHE) report (2020) highlighted that competent lecturers contribute greatly to the quality of research output (NCHE Report, 2020). However, the research capacity of lecturers in Uganda is still low (Nakijoba & Awobamise, 2023). In a study at Kyambogo University, low research effectiveness was reported particularly in aspects of publishing books and book chapters (Kasule et al., 2023). Only Makerere University in Uganda, however, came close to achieving the goal established for Global South academic staff, which was 5 per cent permanent personnel in 10 years, with only 2 per cent of the fulltime academic staff being able to publish in journals per academic staff member (Arinaitwe et al., 2021). Therefore, this study determined the relationship between institutional research culture and the research

competence of lectures of Kyambogo University as well as the moderating influence of technology applications use.

1.1.2 Theoretical Perspective. This study was hinged on two theories: Schein's Theory of Organisational Culture (TOC) of 1980 (Schein, 2004) and Davis' Technology Acceptance Model (TAM) of 1986 (Marangunić & Granić, 2015). Schein's TOC suggests that organisational culture is composed of artefacts, espoused beliefs and values, and the basic underlying assumptions (Schein & Schein, 2020). Artefacts refer to tangible and are visible in the physical spaces of the organisations (Gunilla & Matte, 2021). Espoused beliefs and values include the vision statement, policies, agenda, mission, philosophies, values, goals and overall strategies for ensuring quality such as monitoring, training and mentorship. The basic underlying assumptions in an organisation represent the deeply entrenched and unconscious thoughts, feelings, and perceptions of the people within the organisation and these critically influence their decision-making and overall employee behaviour (Schien & Schien, 2020). This study relied on TOC to examine how the institutional research culture in terms of artefacts, espoused beliefs and values influences the research competences of lecturers.

On the other hand, TAM postulates that the motivation to adopt technology depends on the perceived usefulness (USE) and its perceived ease of use (EAS) which in turn affect the behavioural intention (BIN) to use technology, and the subsequent actual use (Bonfanti et al., 2023). The PU represents an individual's level of belief that technology could be used to address a particular problem (Idoga et al., 2022). The perceived ease of use represents an individual's level of belief that technology use makes tasks easier to complete or would be free of effort (Idoga et al., 2022). Behavioural intention implies that the more positively a person considers the use of technology application to be important, the more likely they will develop intentions to

continuously use it to improve performance (Bonfanti et al., 2023). This study assessed how TAM aspects, namely USE, EAS and BIN influenced research competence of lecturers.

1.1.3 Conceptual Perspective. The study was principally on the relationship between three variables, namely; research competence, institutional research culture, and technology applications use. Research competence is defined as a collection of skills required to conduct high-quality research, including the capability to identify a problem, gather data with suitable tools, choose appropriate data analysis methods, test for significance, and interpret the results (Ismuratova et al., 2018; Marushkevych et al., 2022). In this study based on Marrs et al. (2022), research competence refers to research content knowledge, review skills, methodological skills, reflective ability, and communication skills. They define content knowledge as being aware of the central theories and the current findings in one's discipline, relevant methodology, and communication standards in academic research; skills in reviewing the status of research is having skills for searching, reviewing the state of research and assessing literature for gaps; methodological skills is being able to systematically plan for the research process, and careful assortment and application of research designs and methods; skills in reflecting on research results are skills that enable one to theoretically and methodologically reflect on their research results, the scientific and practice rich as well as ethical implications; communication skills refers to academic writing skills in accordance with existing conventions in a discipline, presentation at a research colloquium and being able to write and publish a manuscript that meets desired standards of a journal.

On the other hand, research derives its meaning from an old French word "recerchier" which means to search over and over again but often, it refers to a systematic scientific search for knowledge or pertinent information on a specific topic of interest. Some studies consider it to be

a scientific approach that answers a research question, solves a problem and or generates new knowledge through a methodical collection of data, its organization, analysis and interpretation to make informed decisions and ultimately reporting findings to stakeholders (Kabir, 2016; Pawar, 2020). Types of research encompass applied research, basic research, descriptive research, analytical research, conceptual research, empirical research, longitudinal research, laboratory research, conclusion-oriented research. These research types may follow different designs but they are all aimed to provide knowledge and solutions to problems (Pawar, 2020).

Institutional research culture encompasses both the visible and invisible aspects of an institution that support research productivity (Jayachandran & Chandrasenan, 2021). In this study, based on organisational culture theory, institutional research culture was represented by research artefacts, espoused research beliefs, and fundamental underlying research assumptions.. The research artefacts are tangible and measurable structures and facilities within the university for example the scientific equipment, sets of archival data, and computing networks, technical services as well as the social and physical environment that facilitate research activities (Fecher et al., 2021). The expoused beliefs and values cover non-tangible research facilities for example research collaboration and sharing which basically encompasses the formation of a research group for joint research projects, knowledge sharing and flow, co-authorship, and dissemination of knowledge (Lima et al., 2021). According to the Turyahikayo et al. (2024) espoused beliefs and values refers to the intangible aspects of the institution for example, the mission statement, vision, goals, objectives, policies and guidelines. These greatly influence all the functions and activities of the institution for example a research agenda and policy influence and facilitate the growth, management and coordination of innovations quality across research entities including universities.

The other aspects of espoused beliefs and values are research monitoring and mentorship. Research monitoring is a process of authenticating that the conduct of research follows the approved research protocol to its' highest scientific and ethical standards (Metro South Health, 2023). Research mentorship is a process whereby a more experienced researcher guides another researcher by providing an opportunity for appraising research abilities, ideas, motivation and building of professional networks (Ngongalah et al., 2021). The research basic underlying assumptions on the other hand refer to the unconscious thoughts and perceptions of the people in the organisation (Tadesse, 2019). These eventually influences their decision making and behaviour for example their attitude towards work and in this case research activities, whether they perceive the working conditions as conductive, bothersome, or unfriendly and their perceptions of research conferences, research collaborations, sharing and the overall benefits.

Technology Applications Use, the MV scholarly refers to the utilization of technological applications for various activities such as academic writing, collaborations, utilisation of bigger datasets and their management, statistical testing, plagiarism check, presentation and dissemination of results (Verma, 2019). In this study, technology applications use based on TAM referred to the perceived usefulness (USE), the perceived ease of use (EAS), and behavioural intention (BIN). Perceived use in the case of building research competence is concerned with the perceived value of technology applications in the entire spectrum of conducting research up to its dissemination. The perceived ease of use is concerned with trhe researcher's belief in the use of various technology applications in academic research writing, ensuring research collaborations, managing data and its analysis, ensuring data is free of plagiarism and in disseminating findings is free of effort. Behavioural intentions to use technology applications originate from the already PU and PEU. Therefore, a researcher who perceive technology applications as useful and considers

them to be free of efforts (Ajibade, 2018), will ultimately develop a consistent behaviour in using them.

1.1.4 Contextual Perspective. Kyambogo university teaching staff's research competence was the context of this study. The Kyambogo University research policy clearly spells out the importance of its trifocal functions including research (Kyambogo University, 2014). Kyambogo University has units, departments, and strategies to facilitate research activities, for example, it established the Directorate of Research and Graduate Training, institutional research repository, competitive research grants and has several memoranda with other institutions across the world to enable collaborative research, training and mentorship. According to EduRank (2025), Kyambogo University Ranks 4th out of 46 Universities in Uganda and 140th out of 1104 in Africa in terms of research output, indexing and citations, nonetheless, some studies point out that research productivity and effectiveness of lecturers at Kyambogo University are still wanting (Kanaabi et al., 2022), yet research skills are perfect predictors of research productivity (Rwakijuma, et al., 2023).

Further more, Kasule et al. (2023) also indicated that of the lecturers 81 per cent and 79 per cent barely authored a book and book chapter respectively. In addition, lecturers have inadequate potential to win research projects and to publish their research work (Kasule et al., 2022). Turyahikayo et al. (2023), reported similar findings among lecturers of Busitema and Kyambogo Universities indicating low publication capability and ability to secure funding for research projects. The aboveground makes the basis for the choice of Kyambogo University over and above Universities. It provides a contextual evidence of a well-established research structure at Kyambogo University, yet with low research productivity among lecturers. This led to the unanswered question of whether institutional research culture influences the research competence

of lecturers. This was studied in consideration of the moderating effect of technology applications use among lecturers.

1.2 Statement of the Problem

Research competence plays a vital role in enhancing intellectual, communicative, innovative and design capabilities of research entities. Those who achieve research competence experience heightened intellectual engagement and develop a strong motivation to cause change in their environment (Marushkevych et al., 2022). Acknowledging the significance of research competence at university level in Uganda, specific measures have been implemented to strengthen the research abilities of staff. For example, they have been allocating funding to support multidisciplinary research and innovation initiatives (Nakijoba & Awobamise, 2023). Kyambogo University in particular has a research policy, research infrastructure and the Directorate of Research and Grants that oversee all innovations and research activities (Kyambogo, 2014).

Despite the aforementioned efforts, research competences of lecturers remain low as indicated by low research productivity, publication proficiencies, inability to win project funds, limited collaborations and minimal ability to connect research to industry (Kanaabi et al., 2022; Kasule et al., 2022; Kasule et al., 2023, Turyahikayo et al., 2023). Kasule et al. (2023) found that 81 percent of lecturers at Kyambogo University rarely authored a book, and 79 percent rarely wrote a book chapter. In addition, the Parliamentary Sectoral Committee of Education and Sports report (2023/2024) indicated minimal evidence on research activities in the education sector in the country although research and capacity building were highlighted among areas of focus and objectives (Sectoral Committee on Education and Sports, 2024). These can be attributed to

inadequate research infrastructure and facilities to support the mandate of lecturers that includes research among others (NCHE, 2024).

However, no single study alludes to research competence of lecturers as the likely contributing factor to the minimal research productivity and effectiveness which guided the research question that; does institutional research culture influence research competence if moderated by technology applications use among lecturers of Kyambogo University? This was a pertinent question to address because if the problem remained, the contribution of Kyambogo University to the knowledge economy and as conduit to the desired education reforms of the 21st century would not take shape hampering achievement of Uganda's Vision 2040. This instigated the need for this study to assess the factors relating to it, specifically determining at the influence of institutional research culture on research competence moderated by technology applications use of lecturers.

1.3 Purpose of the Study

This study sought to assess the influence of institutional research culture on research competence moderated by technology applications use of lecturers of Kyambogo University.

1.4 Objectives of the Study

The objectives of the study were;

i. To examine the influence of institutional research culture on the research competence of lecturers of Kyambogo University.
ii. To assess the influence of technology applications use on the research competence of lecturers of Kyambogo University.

iii. To find out the moderating effect of technology applications use on the influence of institutional research culture on the research competence of lecturers of Kyambogo University.

1.5 Research Hypotheses

The study tested the following hypotheses:

i. Institutional research culture has a significant positive influence on the research competence of lecturers.

ii. Technology applications use has a significant positive influence on the research competence of lecturers.

iii. Technology applications use has a significant positive moderating effect on the influence of institutional research culture on the research competence of lecturers.

1.6 Scope of the Study

The geography of the study was Kyambogo University located in Nakawa Division, Kampala, Uganda. Kyambogo University was seleted for this study because studies (Kanaabi et al., 2022; Rwakijuma et al., 2023; Kasule et al., 2023; Turyahikayo et al., 2023) indicate that research productivity and efficiency of lecturers of Kyambogo University is low. The content scope was on institutional research culture, technology applications use and research competence of lectures. Research competence of lectures was measured in terms of content knowledge, research review skills, methodological skills, reflective ability and communication skills. Institutional research culture was measured by artefacts, espoused beliefs and values while technology applications use was measured by perceived use, perceived ease of use, behaviour intention to use them. The time

scope was October 2024. It is assumed that the semester will running and lecturers was easily accessed.

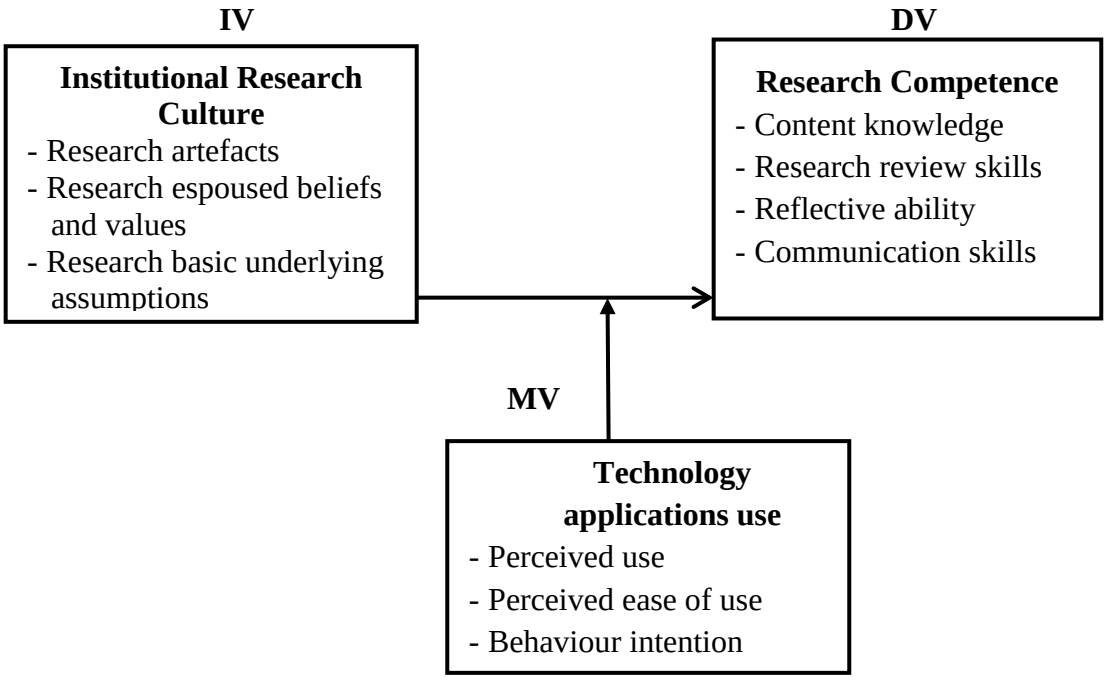
1.7 Significance of the Study

The study makes significant contributions to policymakers, universities, lecturers and the body of knowledge. To the policymakers such as the Ministry of Education and Sports and the National Council for Higher Education (NCHE), the findings of this study might be a basis for additional and new guidelines for policy formulation and implementation with the intention to support and building a resilient institutional research culture that would hasten development of research competences of lecturers. To the universities, the study might reveal grey areas that require more support to enhance research competences of lecturers. To the lecturers, the findings might provide a basis for promoting the desired institutional research culture and technology support depending on the factors that were found to be significantly related to their research competence. To the body of knowledge, it provides novel insights on research competences and highlight gaps for further studies in line with the facets for developing the research competence of lecturers.

1.8 Conceptual framework

Figure 1.0.1

Conceptual framework



Source: generated using ideas from Ghosh and Srivastava (2014),Teo et al. (2017), Gunilla and Matte(2021), and Marrs et al. (2022).

This conceptual framework (Figure 1) indicates that institutional research culture; the independent variable moderated by technology applications use influences research competences. The components of institutional research culture are artefacts, basic underlying assumptions and espoused beliefs and values. Technology applications use comprises the perceived use, perceived ease of use, and behavioural intentions while research competence in terms of content knowledge, research review skills, reflective ability and communication skills.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter provides literature on institutional research culture, technology applications use and research competence. The literature includes the theoretical pespectives and reviewed literature. It also covers the gaps in literature on the variables of study.

2.1 Theoretical Review

The Theory of Organisational Culture (TOC) of 1980 (Schein, 2004; Schein & Schein, 2020), and the Technology Acceptance Model (TAM) of 1986 by Davis (Davis, 1989) informed this study. The theory of organisational culture describes organisational culture about employees and their superiors, processes, products, and leadership's espoused values. It consists of whatever there is to know in an organisation to operate acceptably. The theory of organisational culture provides 3 levels of operation: artefacts, the basic underlying assumptions and espoused beliefs and values (Schein & Schein, 2020). The Artefacts are observable features in the institution. They include technologies and products, ceremonies, dress code of employees, language practices and stories, the employee's sense of humour, work organisation and processes. Such artefacts influence research productivity (Jayachandran & Chandrasenan, 2021). The espoused beliefs and values are not only represented in the organisation's vision and mission but also in the employee's principles and personal objectives. The basic underlying assumptions embody the unstated, interpretative personal schemes and invisible dimension of thoughts, perceptions and feelings that impact decision-making and employee behaviour. They develop over time as members strategize to overcome organisational problems (Schein & Schein, 2020).

In relation to TOC, institutions could have the artefacts, the basic underlying assumptions and espoused beliefs and values but these my not be taken advantage of by researchers. Therefore, TOC misses out the aspect of researchers tapping into the available resources for their benefit as far as research output is concerned. This theory indicates that institutions are characterized by a collection of subcultures based on geographic location, organisational hierarchy, and or a common set of functions that work together to enhance organisational efficiency and effectiveness (Schein, 2004). Again, the theory indicates that employees may get used to the values, beliefs, processes and structures and eventually take them for granted. Importantly, the theory identifies variables namely artefacts, basic underlying assumptions and espoused beliefs and values, which was studied in relation to research competences of lecturers.

Technology Acceptance Model (TAM) proposes three variables, namely perceived use (USE), perceived ease of use (EAS) and behavioural intention (BIN) all of which influence an intricate relationship between exterior variables and possible systems. USE is concerned with the degree to which technological tool will increase performance or enable them to achieve their goals while EAS is concerned with the people's belief that using a technology application was straightforward and effortless (Burgess & Worthington, 2021). Both USE and EAS influence the continued behaviour to consistently use technology in day today activities. TAM has taken a principal role in elucidating users' behaviour toward technology and providing explanations of the determinants of technology acceptance across a broad range user population such as teachers, students, in telemedicine and other sphere both in the professional and private lives (Burgess, & Worthington, 2021). TAM provides a basis for predicting behaviour towards to the reception or rejection of technologies (Marangunić and Granić, 2015). The theory identifies variables namely perceived use, perceived ease of use and behavioural intention which was studied in relation to

research competences of lecturers. Therefore, it is important to note that while TAM provides such subconstructs, it does not apply them to research skills which this study has set out to do.

2.2 Research Competence: A conceptual Review

Research competence is defined as a set of proficiencies that portray successful mastery of research procedures and activities (Marushkevych et al., 2022). Ismuratova et al. (2018) contend that research competence is an essential quality of a person expressed in their willingness to solve creative problems independently and the possession of technical knowledge in research, skills and the readiness to apply them in professional activities. Caingcoy (2020) expounds that research competence refers to one's potential to conduct high-quality research studies or the ability to recognise a problem, use suitable instruments to collect data, analyse and interpreting the results.

Jamieson and Saunders (2020) in their 8 years retrospective qualitative assessment of teaching both soft and technical skills in a research class at Indiana University, posit that the students in both undergraduate and post-graduate classes attained distinct research competences which included superior judgment, problem-solving, writing skills, statistical abilities, and effective dissemination of research findings. In a descriptive survey at a university in Philippines Alejandro et al. (2022) reported that students perceived their cognitive component of research competences to be high. They were able to follow the right format for writing a research paper, through various processes to the presentation of results. In a study in Virginia involving 456 junior lecturers, Marrs et al. (2022) categorised the attributes of research competence as content knowledge, review skills, reflective ability, and communication skills. These competences were pointed out by another study in a Pedagogical University in Uzbekistan (Nazarova, 2019). Nazarova's findings indicated that for students to acquire research methodological skills, reflective

thinking, and general skills in project work, modular training and recognition of contribution to research should be considered.

An inductive non-experimental study by Begunova and Qingyu (2021) in Kazakhstan that investigated teachers' research competence as a way of enhancing competitiveness in HEI reported that lecturers are practically researchers, thus they ought to think critically, creatively, design research projects and communicative findings. According to a narrative review by Winarno et al. (2017), lecturers' competence encompasses showing intellectual honesty, admitting mistakes, being open to new truths in science, and being diligent in the process of ascertaining scientific truth. In a cross-sectional study that explored the research competence of 179 teacher education students in the University of Turku in Finland, Salmento et al. (2021) reported that scientific conceptualisation of research was challenging for students despite their level and year of study. Only 50 per cent of participants could describe theories in a scientific context. The reviewed studies indicated the contextual and empirical gaps. The contextual gap was portrayed in terms of the differences in the geographical locations and the study groups (mainly students at various levels of education) of the various studies that were reviewed and the current study which was conducted in Uganda particularly among lecturers. The empirical gap was observed in the differences in the specific objectives of the reviewed studies and the current study whereby the predictors and the moderators of the outcome variable in this case, research competence were different.

2.3 Review of Related Literature

2.3.1 Institutional Research Culture and Research Competence. Institutional culture is defined by Tierney and Lanford (2018) as the profoundly entrenched patterns of the institution's

behaviour, the shared values, and or ideologies that members of the institution hold towards the organisation. Institutional culture is defined by a framework for contextualizing and exploring multiple perceptions within a single institution (Teine, 2023). According to Teine, it embraces the temporal nature of an institution by embracing a longitudinal analysis of historically derived data. Therefore, institutional culture separates an institution from others and is demonstrated in its unique behaviour and performance, thus making sense of the institution's intricate web of significance that drives an institution forward. Institutional culture is a prerequisite for excellence in any institution.

In a predictive cross-sectional study among research teachers and supervisors in Eastern Samar State University, Obliopas et al. (2022) examined how institutional research culture influenced the teachers' research competence. Results revealed that artefacts (research infrastructure and working conditions) and espoused factors (research sharing and collaborations, monitoring and mentorship) significantly influenced research competences of the teachers except for research policy and agenda. In a quantitative study among 513 lecturers of a private university in Jabodetabek, Asbari et al. (2020), assessed the mediating role of innovative competence on organisational culture, as well as on the hard and soft skills of lecturers. Results from hypothesis testing indicated organisational culture had a significant positive effect on the teachers' innovation capability. The study leaves a conceptual gap as it focused on teachers' innovative capacity and not their research competences. A descriptive cross-sectional study, Lodhi (2016), assessed the factors influencing research culture at Pakistan University. Findings indicated that institutional research culture is facilitated by communication with a professional network, work environment, mentoring, resources and sufficient time allocation to research. However, the study presents a

contextual as it was done in a context outside Uganda. This study involved lecturers in the Ugandan context.

A qualitative study at Cebu Normal University in the Philippine indicated that developing a research culture is a whole investment process that is evidence-based consisting the observable yet measurable outputs such as conducting research, writing manuscripts, dissemination of results through presentations and publications and the influence of the research products to policies and further innovations (Olvido, 2021). A qualitative study at El Salvador University revealed that a research culture of an institution enables effective consolidation of incentives necessary to support scientific activities and their monitoring for compliance with the ultimate aim of achieving the mission of institution (Linares, & González, 2023). In another qualitative study with 14 professors and senior lecturers at Makerere University on the culture and disciplinary research choices, Kaweesi et al. (2018) reported the existence of a linkage between disciplinary culture and the research choices of lecturers. It was indicated that where culture is well established, lecturers develop insights into their disciplines and can make appropriate choices of areas to conduct research. In a report by NCHE 2019/20, in Uganda, it was indicated that a well established research environment supports academic staff to create new knowledge but some lecturers may lack even office space. However, methodological gaps emerged in the reviewed studies whereby three of the reviewed studies were qualitative, and one by NCHE was a report highlight gaps in higher institutions of learning in Uganda. This study used the quantitative approach for generalisation of the findings.

2.3.2 Technology Applications Use and Research Competence. Technology use refers to the application of all forms of contemporary media and digital resources in various life situations efficiently and effectively (Reddy, 2021). Technology plays a role in every field and one of such

fields is research (Murshed & Alasali, 2020). According Murshed and Alasali, education and research have become more effective and widespread due to technology applications use. Researchers are more able to share knowledge and experiences, conceivable through technology applications. Also, information searching, utilization, communication, development of science, the evolution of research and the dissemination of knowledge have become easier to undertake.

In their narrative review paper, Murshed and Alasali (2020) assessed faculty cadres' reliance on technology to plan and implement research investigations. The review revealed that research activities are simplified by technology applications whereby everything is done at the click of a finger to access academic journals, academic writing, gathering data, analysis, presentations, and publishing research work in international peer-reviewed journals. Therefore, technologies use enhances research competence. However, since their findings were based on a review, it portrays an methodological gap whereby the current study considered original data.

In a study conducted in three institutions of Higher Education in Ukraine, Mosiienko et al. (2023) showed that the use of technology applications and research methods approach to teach distance learners had a high effect on their level of research competence. However, since this study involved institutions from a developed country, this very study was conducted in a developing country to verify the findings. A study at Bu Ali Sina University in Iran indicated that the level of use of technological applications positively influenced the research self-efficacy of graduate students (Seraji et al., 2017). A survey done in Ghana among students of the University of Cape Coast and the University of Ghana revealed that a greater number of students often accessed technological amenities such as applications for communication, bibliography, data management, and those for sharing research output but their use for those particular purposes was low (Ankamah, 2019). Therefore, technology use did not improve their research competences of students. Thus,

this study raised a knowledge gap because it focused on the use of technology in research rather than whether technology use could influence research competence, besides, it was a student-centered study.

2.3.3 Institutional Research Culture and Research Competence Moderated by Technology Applications Use. The institutional research culture refers to a system of values, attitudes, and norms that are endorsed as appropriate and relevant to research processes within the institution and the various support offered to the researching individuals and or groups in the institution (Jayachandran & Chandrasenan, 2021). It describes a research environment including the norms in behaviours of the researchers, their expectations, attitudes and values that are endorsed by the esearch communities (University of Cambridge, 2021). According to Jayachandran and Chandrasenan (2021) institutional research culture determines the nature of research conducted, how it is conducted, its quality, how it is evaluated, supported, communicated and how institutions recognise varied contributions of researchers. Institutions base on the existing research culture to offer travel grants, recruit faculty, and plan post-doctoral fellowshipsInstitutional research culture is essential for the institutions to maintain a sustainable and viable research environment and for the improvement of research quality. Nonetheless, every educational institution has a unique academic environment, thus it requires a different research culture to suit its environmental conditions.

On the other hand, technology applications use refers to the use of modern technology applications, programmes and internet based on electronics (Schatzberg, 2018). Technology applications are essential ingredients for today's success. They are being used in almost every field, in offices, research centers, banks, homes, shops, industries, airports, railway stations, and many other institutions and organisations. Thus, every activity or service today relies upon

technology applications to get information, store it, use it, manage it, and relay it to others (Verma, 2019). A study in Spain, by Orus et al. (2020) indicated that technology applications use had a positive effect on the acquisition of 21st Century skills among students. Whereas the above theoretical literature indicates that institutional research culture and technology applications use are important in educational institutions, literature search did not reveal studies showing the moderating effect of technology applications use on the influence of institutional research culture and research competence of lecturers hence the need for this study.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter covers the strategies that guided the investigations of the study. The methodology covers; the research design and approaches, population and sample, sampling techniques, measurement of variables, data quality control, data collection procedure, data analysis, ethical considerations and anticipated limitations.

3.1 Research Design

A correlational research design was adopted for this study. A correlation refers to the association or a link between variables. Therefore, a correctional research design was found best suited for this study because of its capacity to examine the relationship or association between a number of variables in a single group without manipulating any of them and the potential to provide a correlation coefficient, an indication of the direction and strength of the relationship (Devi, 2023). The study determined the influence of institutional research culture, and technology applications use on research competence.

3.2 Study population

The study population constituted of 405 (KyU Human Resource Teaching Staff list, 2023). Lecturers from the schools, faculties, institute and directorate at Kyambogo University in Uganda making them the sole unit of analysis for this research. The lecturers included the teaching assistants, assistant lecturers, lecturers, senior lecturers, associate professors, and professors were best suited for this study because one of their cardinal role is to carry out research. Therefore, it

was worthwhile to assess how institutional research culture and technology applications use influenced their research competences.

3.3 Sample Size Determination

The study sample size was determined by the use Krejcie and Morgan table for a known population and then proportionate samples using the following formula; (n/N)S (Krejcie and Morgan, 1970), where n is the sample size per faculty or school, N is the total teaching staff/population and S is the total sample obtained from Krejce and Morgan as indicated in Table 3.1.

Table 3.1

Population and Sample Size

S/N	Faculties in Kyambogo University	Population/N	Sample size/n
1	School of Education	45	22
2	School Art and Industrial Design	14	7
3	School of Management and Entrepreneurship	36	18
4	School of Built Environment	18	9
5	School of Computing and Information Science	12	6
6	School of Vocational Studies	13	6
7	Faculty of Engineering	33	16
8	Faculty of Science	79	39
9	Faculty of Agriculture	16	8
10	Faculty of Special Needs and Rehabilitation	30	15
11	Faculty of Arts and Humanities	61	30
12	Faculty of Social Sciences	48	24
	Total	405	200

Source: KyU Human Resource Teaching Staff List (2022)

3.4 Sampling Technique

Using simple random sampling, every faculty member stood an equal probability for selection and inclusion in the study (Nooret al., 2022). To ensure this, the staff list per faculty and school was obtained from the Human Resource Director at Kyambogo University. Each list was entered into MS Excel and static random numbers were assigned to each respondent followed by sorting and filtering with random numbers. This procedure ensured that the study sample was unbiased with equal probability to participate in the study. Since the study was quantitative, simple random sampling was sufficient.

3.5 Measurement of Variables

The study variables were Research Competence (DV), Institutional research culture (IV), and Technology applications use (moderating variables). The variables characteristics and sources are indicated in Table 3.2.

Table 3.2

Variable Characteristics and Source

Variable	Nature of Variable	Indicators and realities	Source
Research competence	Dependent	-Research content knowledge, -Review skills -Methdological skills -Reflective ability -Communication skills	Marrset al., (2022)
Institutional research culture	Independent	- Research artefacts -Research espoused beliefs and values -Basic underlying assumptions	Gunilla & Matte, (2021) Ghosh & Srivastava (2014)
Technology application use	Moderating Variable	-Perceived technology use -Perceived ease of use -Behaviour intention	Teo et al., (2017).

3.6 Research Methods

The study employed quantitative research methods which deployed a self-administered questionnaire. This method was chosen due to its potential to use numerical data as dictated by the study's specific objectives, to find patterns, and make predictions (Apuke, 2017). Quantitave research methods generally allow generalization of findings to a wider population.

3.7 Research Instrument

The study employed self-administered questionnaire. This method was selected due to its ability to collect numerical data, to find patterns, and make predictions (Apuke, 2017). Quantitave

research methods generally allow generalization of findings to a wider population. The questionnaire that was used for this study consisted of standardized close-ended where respondents were required to select a response from a set of predefined responses (Semyonov-Tal & Lewin-Epstein, 2021). The questionnaire comprised 4 sections (Section A-D). Section A comprised the biodata of the respondents, sections B to D comprised questions on dependent, independent, and moderating variables. The questions were anchored on a five-point Likert Scale; where 1= Strongly Disagree (SD), 2= Disagree (D), 3= Moderately Agree (MA), 4= Agree (A), 5= Strongly Agree (SA) with a clearly demarcated midpoint that represented neutrality.

3.8 Data Quality Control

3.8.1 Validity of data. The study established construct validity. Using SmartPLS 4.0, confirmatory factor analysis (CFA) in consideration of convergent validity and discriminant validity was determined. Convergent validity was assessed by the use of average variance extracted (AVE) and constructs with values above 0.5 were retained while discriminant validity was considered by the Heterotrait-Monotrait ratio of correlations (HTMT) < 0.90 (Kamis et al., 2020). This procedure affirmed that the variables under consideration were suitable to measure what they were designed to measure. The summary of validity tests results is presented in Table 3.3.

Table 3.3

Validity of Data on Research Competence, Institutional Research Culture and Technology Applications Use

Measures	AVE	RC	COK	COS	RRF	RRS
RC						
COK	0.517	0.683				
COS	0.768	0.898	0.863			
RRF	0.550	0.518	0.675	0.814		
RRS	0.515	0.849	0.851	0.852	0.429	
Measures	AVE	IRC	ATE	BAU	EBV	
IRC						
ATE	0.542	0.639				
BUA	0.565	0.880	0.573			
EBV	0.525	0.894	0.732	0.693		
Measures	AVE	TAU	BIN	EAS	USE	
TAU						
BIN	0.563	0.452				
EAS	0.554	0.783	0.892			
USE	0.518	0.425	0.819	0.893		

Key: AVE = Average Variance Extracted, RC = Research Competence, COK = Content Knowledge, COS = Communication Skills, RRF = Reflective Abilities, RRS = Research Review Skills, IRC =Institutional Research Culture, ATE= Research Artefarcts, BUA = Basic Underlying Assumptions, EBV = Espoused Beliefs and Values, TAU = Technology Applications Use = Perceved Use of Technology Applications, BIN = Behavioural Intentions for Using Technology Applications, EAS = Perceived Ease of Use of Technology Applications

It should be noted that methodological skills which was one of the constructs of research competence was deleted having not met the criteria for validity and reliability. Its indicators showed Average Variance Extracted (AVE) values below 0.5, and discriminant validity above 0.90. All the other cconstructs fulfilled the aforementioned criteria were retained.

3.8.2 Reliability of data. Reliability was determined to ensure the consistency, repeatability, precision, and trustworthiness of the indicators measuring different constructs (Mohajan, 2017). In this study, Cronbach's alpha and composite reliability (CR) were applied to determine internal consistency of final data. The values that ranged from 0.7 to 0.9 were well thought out as satisfactory (Kamis at al., 2020). When used together, Cronbach's alpha and Composite reliability do accurately provide a true reliability value of the constructs (Peterson & Kim 2013) and the cutoff points portray good internal consistency between the constructs in the model. Results on reliability were as follows in Table 3.4.

Table 3.4

Reliability of Data on Research Competence, Institutional Research Culture and Technology Applications Use

Measures	α	CR	VIF
COK	0.689	0.811	1.748
COS	0.700	0.869	1.991
RRF	0.795	0.859	1.433
RRS	0.760	0.840	2.092
ATE	0.778	0.851	2.148
BUA	0.807	0.866	1.416
EBV	0.816	0.867	1.975
BIN	0.801	0.864	1.192
EAS	0.865	0.896	2.229
USE	0.863	0.894	2.198

In reference to table 3.4, it was found that data on the four constructs of research competence [research content knowledge (COK), communication skills (COS), reflective ability (RRF), and research review skills (RRS)] were internally consistent whereby all the Cronbach Alpha and

composite relaibility values ranged from o.689 ≈ 0.70 to 0.90 while the cut off points of Variance Inflation Factor (VIF) ranged between 1.433 to 2.092. These values indicated that the items under each construct of research competence were independent of each other hence an indication of good multicollinearity of the items. However, the data for the fifth construct of research competence which was research methodology skills was found to be unreliable with Cronbach's Alpha and Composite Reliability values lower than 0.7 and with the VIF value below 1, hence it was deleted. The data for the other variables that is, institutional research culture whose constructs were [research artefacts (ATE), basic underlying assumptions(BUA) and espoused beliefs and values (EBV)] and technology applications use whose constructs were [perceived use of technology applications (USE), perceived ease of use of technology applications (EAS) and behavioral intentions to use technology applications (BIN) were reliable with Cronbach's alpha and composite reliability values ranging from 0.778 to 0.865. The VIF values for the same variables ranged from 1.192 to 2.229, an indication of independence of the items hence a high degree of multicollinearity of data.

3.9 Data Collection Procedure

To access the research respondents and administer the instrument, the researcher first sought an introductory letter from the Directorate of Research and Graduate Training of Kyambogo University having successfully presented the research proposal and sought its approval from supervisors and the Department of Educational Planning and Management. Following, the aforementioned clearance, the researcher hired a research assistant who was trained and familairised with the protocol and instruments. Therefore, the role of collecting data was done by the research assitant for a period of three months. The questionnaire was left with each lecturer to fill at leasure and was collected after a period of two weeks.

3.10 Data Management

After collecting data, it was coded, entered into a software for data analysis known as SPSS Version 30.0. It was analysed to detect errors, treated for missing data and outliers. The data was analyzed using both descriptive and inferential analyses. Descriptive analysis involved calculating frequencies, mean, percentages and standard deviations with the use of SPSS. However, SmartPLS 4.0. was used to run inferential analysis particlulary the analysis of hypothesis one to three. According to Mehmetoglu and Ventunini, (2021) SmartPLS is very effective in modeling and presenting path analysis.

3.11 Research Ethical Considerations

Ethical issues were given attention throughout the research process. Besides ethical clearance with the Directorate of Research and Graduate Training of Kyambogo University, the researcher assured and ensured ethical standards throughout data collection. The respondents were told of the general objective of the study, and written informed consent to be part of the study was sought. Thereafter, they were assured of privacy, anonymity, confidentiality, honesty in reporting, and dissemination of findings. To ensure privacy, lecturers kept their identy confidential and their were assured of utmost confidentiality of the information they would provide. The tools were secured in a very private place and they will be destroyed soon after graduation and once findings have been shared through conference and or publication. With respect to honesty, the report accurately represents the data collected without alteration.

CHAPTER FOUR

RESULTS PRESENTATION, INTERPRETATION, AND ANALYSIS

4.0 Introduction

This chapter presents research results of the study on institutional research culture and research competence of lecturers of Kyambogo University moderated by technology applications use. The findings are presented in order of response rate, followed by demographic factrs of the respondents, and then reults on the dependent variable which is research competence. These are followed by the findings on the independent variable (institutional research culture), and moderating variable (technology applications use) in relation to research competence respectively. The chapter provides a complete presentation and analysis of the study's results, highlights the key trends, and insights that emerged from the data.

4.1 Response rate

The anticipated sample size for this study was 200 lecturers of Kyambogo University but the actual number of respondents were 192 (96%). This indicates a slight deviation from the initially anticipated sample, but it was considered adequate because it is way above the threshold of 50% of the initial sample size. According to Pielsticker and Hiebl (2020), a sample size of 50% or more is deemed sufficient in humanities studies, making the sample of 192 respondents a reliable representation of the study population.

4.2 Background Characteristics of respondents

This section of the study provides findings on the background data of the respondents including their gender, age range, levels of education, designation and work experience. The results are presented in Table 4.1.

Table 4.1

Background Characteristics of Respondents

Variable	**Category**	**Frequency (N)**	**Pecentage (%)**
Gender	Male	105	54.7
	Female	87	45.3
	Total	192	100
Age range	29 and below	14	7.3
	30 to 39	50	26.0
	40 to 49	81	42.2
	50 and above	47	24.5
	Total	192	100
Education level	Bachelor	10	5.2
	Masters	65	33.9
	PhD	117	60.9
	Total	192	100
Designation	Professor	1	0.5
	Associate Professor	7	3.6
	Senior Lecturer	4	2.1
	Lecturer	105	54.7
	Assistant Lecturer	65	33.9
	Teaching Assistant	10	5.2
	Total	192	100
Experience	Less than 3 years	15	7.8
	3 to five years	53	27.6
	6 to 10 years	75	39.1
	More than 10 years	49	25.5
	Total	192	100

The findings in Table 4.1 show that most lecturers who took part in the study were male (54.7%), whereas the females were 45.3%. Although males were more prevalent, the substantial percentage of females suggests that the results fairly represent both genders. Regarding age, the largest group of lecturers was between 40 and 49 years old (42.2%), followed by 30 to 39 (26.0%), then 50 years and above (24.5%), with the smallest group being 29 years and below (7.3%). This indicates that lecturers under 29 are relatively few compared to those over 30. The data also suggested that

lecturers over 30 years had less variation in their ages, further supporting that the results accurately reflect the age distribution of the lecturers. Concerning education level, most lecturers held a PhD (60.9%), followed by master's degree holders (33.9%), and a smaller proportion had a bachelor's degree (5.2%). The predominance of PhD holders provides strong evidence of the data's representativeness.

The results on designation indicated that the largest proportion (54.7%) were appointed as lecturers, followed by assistant lecturers (33.9%), teaching assistant (5.2%), associate professors (3.6%), senior lecturers (2.1%), and professors (0.5%) respectively. These results portrayed that lecturers and assistant lecturers were not highly divergent and so were professors, associate professors, senior lecturers and teaching assistants. The results on teaching experience indicated that the majority percentage (39.1%) had been teaching for 6 to10 years, these were followed those who had been teaching for 3 to five years (27.6%), then those who had been teaching for more than 10 years (25.5%) and then those who had taught less than 3 years (7.8%). These results indicate relatively equal proportion of participants per category of teaching experience which shows representativeness of particpants.

4.3 Research Competence

Research competence, the dependant variable was investigated as a four component concept that included knowledge of research content, research review skills, reflective ability and communication skills. The results are as follows:

4.3.1 Knowledge of Research Content. The first element of research competence was knowledge of research content which was studied using six indicators. The results as indicated in Table 4.2.

Table 4.2

Descriptive Statistics for Knowledge of Research Competence

Knowledge of Research Content		SD	D	MA	A	SA	Mean
I have a clear understanding of the present	F	00	5	28	76	83	4.23
research findings in my academic discipline	%	00	2.6	14.6	39.6	43.2	
I am so acquainted with various research methods	F	01	2	19	79	91	4.34
in my academic discipline	%	0.5	1.0	9.9	41.1	47.4	
My research methodological knowledge and skills	F	2.0	2.0	38	86	64	4.08
are comprehensive	%	1.0	1.0	19.8	44.8	33.3	
I am aware of the greatest significant national and	F	5	3	59	97	28	3.73
international publication outlets in my discipline	%	2.6	1.6	30.7	50.5	14.6	
I am aware of the publication standards that	F	2	2	54	77	57	3.96
apply to my discipline	%	1.0	1.0	28.1	40.1	29.7	
I am aware of the ethics applied to presentations	F	1	2	32	79	78	4.20
at conferences	%	0.5	1.0	16.7	41.1	40.6	

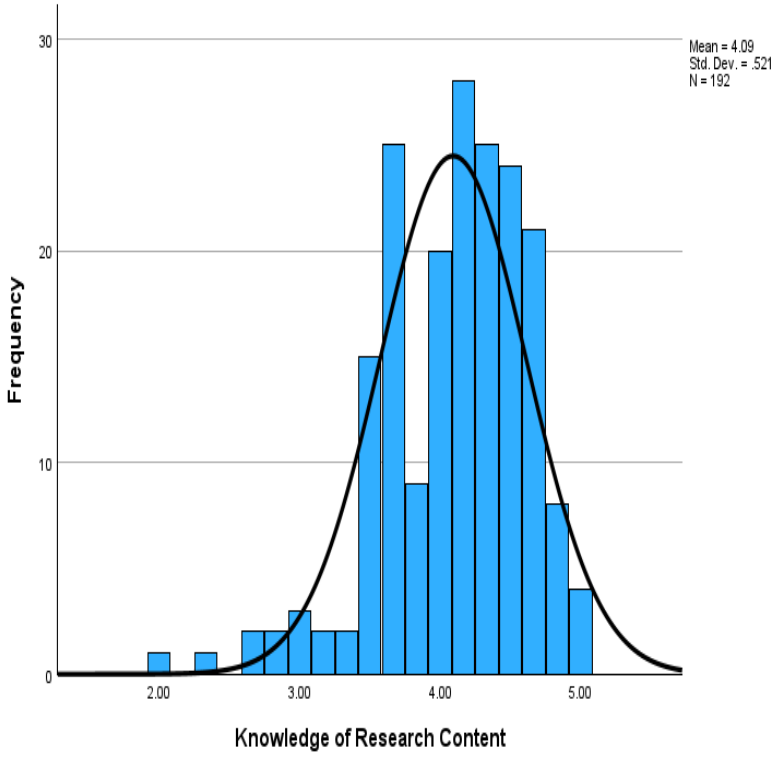
The results in Table 4.2 on whether lecturers had a clear overview of the current research findings in their academic disciplines, cumulatively revealed that the larger percentage (82.8%) agreed whereas 14.6% moderately agreed and 2.6% disagreed. This corresponded well with agree (mean = 4.23) on the five point Likert scale that was used in the study. Therefore, lecturers had current knowledge of the various research findings in their respective disciplines. Regarding being familiar with various research methods in their academic disciplines, the majority (88.5%) agreed while 9.9% moderately agreed and 1.5% disagreed. The high mean of 4.34 indicated that the lecturers were in agreement. Therefore, lecturers were knowledgeable in research methods in their academic desciplines.

In view of whether the lecturers would describe their methodological knowledge and skills as comprehensive, the majority (78.1%) agreed while 19.8% moderately agreed and 2.0% disagreed. The high mean of 4.08 suggested that lecturers were in agreed. Therefore, the lecturers considered their research methodological knowledge to be comprehensive. Concerning whether they were aware of the greatest significant national and international publication channels in their various discipline, the majority percentage (64.6%) agreed while 30.7% moderately agreed and 4.2% disagreed. The high mean of 3.73 implied that the lecturers were aware of the most significant national and international publication outlets in their various disciplines.

With regards to whether lecturers were aware of the publication standards that apply to their discipline, the larger percentage (69.8%) agreed while 28.1% moderately agreed and 2.0% disagreed. The high mean = 3.96 suggested that lecturers agreed that they were aware of the publications standards. Regarding awareness of the standards that apply to presentation at conferences and seminars, the larger percentage (81.7%) agreed while 16.7% moderately agreed and 1.5% disagreed. The high mean of 4.20 meant that the lecturers agreed that they were aware of the standards that apply to presentations at conferences in their subject area. To show the overall rating of research competence by lecturers, an average index was calculated for all the six indicators describing the construct. Both the overall mean and normality of the responses are indicated by the histogram in Figure 4.1.

Figure 4.1

Histogram for Knowledge of Research Content



In Figure 4.1, findings reveal that a mean score (4.09) and a standard deviation (0.521). The high mean indicated that lecturers reported a high level of research content knowldge. The low standard deviation value suggested that the data was normally distributed, a confirmation that the data qualified for parametric analysis. Therefore, the data are suitable for linear regression analysis.

4.3.2 Research Review Skills. Research review skills; the second element of research competence and was studied with five indicators. The results are as in Table 4.3.

Table 4.3

Descriptive Statistics for Research Review Skills

Research Review Skills		**SD**	**D**	**MA**	**A**	**SA**	**Mean**
I can conduct a targeted search on literature	F	00	1	17	78	92	4.40
	%	0.0	0.5	8.9	40.6	50	
I am aware of where to search for relevant literature	F	00	00	13	82	97	4.44
on a specific topic	%	0.0	0.0	6.8	42.7	50.5	
I can do a meta-analytical review	F	6	8	32	83	63	3.98
	%	3.1	4.2	16.7	43.2	32.8	
I can illustrate the inclusion or exclusion of data with	F	9	11	33	76	63	3.90
a PRISMA flow chart	%	4.7	5.7	17.2	39.6	32.8	
I can apply theories to the hypotheses	F	2	7	13	94	76	4.22
	%	1.0	3.6	6.8	49.0	39.6	

Table 4.3 shows whether lecturers could conduct a targeted literature search on a specific topic, cumulatively revealed that the larger percentage (90.6%) agreed while 8.9% moderately agreed and 0.5% disagreed. The high mean of 4.40 corresponded to agree as on the likert scale. Therefore, the lecturers agreed that they could conduct a target literature search on specific topic. As to whether lecturers knew where to search for relevant literature on a specific topic, the majority (93.3%) agreed while 6.8% moderately agreed and none disagreed. The high mean of 4.44 suggested that the lecturers agreed. Therefore, lecturers knew which databases they could explore for relevant literature on a given topic.

Concerning whether lecturers could do a meta-analytical review, the majority percentage (76.0%) agreed while 16.7% and 7.3% moderately agreed and disagreed respectively. The high mean of 3.98 suggested that lecturers could do a meta-analytical review study. With respect to

whether the lecturers could illustrate the inclusion or exclusion of data with a PRISMA flow chart, findings indicated that the majority percentage (72.4%) agreed while 17.2% moderately agreed and 10.4% disagreed. The high mean of 3.90 implied that the lecturers were able to illustrate the inclusion and exclusion of secondary data in a PRISMA flow chart.

Regarding whether lecturers could apply theories to the hypotheses, the larger percentage (88.6%) agreed while 6.8% moderately agreed and 4.6% disagreed. The high mean of 4.22 suggested that lecturers could easily apply theories to hypothesis when conducting research. To show how overall the lecturers rated their research review skills, the average index value for the indicators in the construct was calculated. Figure 4.2 is a histogram showing the mean for all the costructs and normality in terms of distribution of the responses.

Figure 4.2

Histogram for Research Review Skills

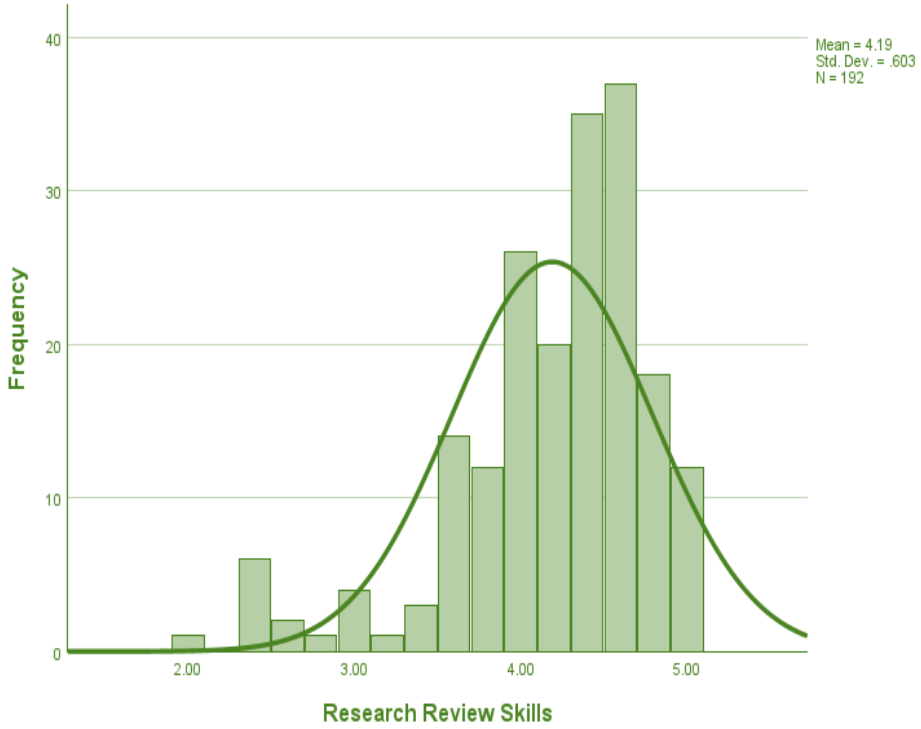


Figure 4.2 shows a mean score (4.19) and a standard deviation (0.603). The high mean shows that lecturers reported a high level of research review skills. The low standard deviation suggested normality of data and confirms that the data qualified for parametric analysis. Thus, the data was appropriate for linear regression analysis.

4.3.3 Reflective Ability. Reflective ability; the fourth element of research competence was studied with 5 indicators. The results are in Table 4.4.

Table 4.4

Descriptive Statistics for Reflective Ability

Reflective ability		**SD**	**D**	**MA**	**A**	**SA**	**Mean**
I can sufficiently interpret research findings	F	00	29	37	55	71	3.87
	%	0.0	15.1	19.3	28.6	37.0	
I can adequately relate research findings to the existing theories	F	00	6	43	78	65	4.05
	%	00	3.1	22.4	40.6	33.9	
I can ably reflect on limitations of various research methods	F	1	2	55	84	50	3.94
	%	0.5	1.0	28.6	43.8	26.0	
I am can reflect on the inferences of research findings in my discipline	F	1	3	57	75	57	3.97
	%	0.5	1.6	29.7	39.1	29.7	
I can ably discuss research results	F	00	7	36	90	59	4.05
	%	0.0	3.6	18.8	46.9	30.7	

The results in Table 4.4 on whether lecturers can sufficiently interpret research findings, cumulatively revealed that the majority percentage (65.6%) agreed while 19.3% moderately agreed and 15.1% disagreed. The high mean of 3.87 corresponded to agreed on the likert scale. Therefore, lectures could sufficiently interpret research findings during their various research studies. As to whether the lecturers could adequately relate research findings to the existing theories, the majority

(74.5%) agreed while 22.4% moderately agreed and 3.1% disagreed. The high mean of 4.05 suggested that the lecturers could adequately relate research findings to the existing theories whenever they would be doing research.

With regards to whether lecturers could ably reflect on methodological limitations of their research studies, the larger percentage (69.8%) agreed, 28.6% moderately agreed while 1.5% disagreed. The high mean of 3.94 indicated that lecturers took time off to reflect whether their methods were adequate or they could be supplemented in future studies. Concerning whether lecturers could ably reflect on implications of research findings, the larger percentage (68.8%) agreed, 29.7% moderately agreed whereas 2.1% disagreed. The high mean of 3.97 implied that lecturers could reflect on implications of research findings and make sense of them.

Regarding whether lecturers could ably discuss research findings with regard to their potential applications, the larger percentage (77.6%) agreed, 18.8% moderately agreed and 3.6% disagreed. The high mean of 4.05 suggested that discussed their results against other studies and contexts. To assess how overall the lecturers rated themselves on their ability to reflect on their research studies or generally research findings, an average index value was calculated for all the 5 indicators in the construct. The histogram (Figure 4.3) shows the overall mean while normality shows the distribution of the responses.

Figure 4.3

Histogram for Reflective Ability

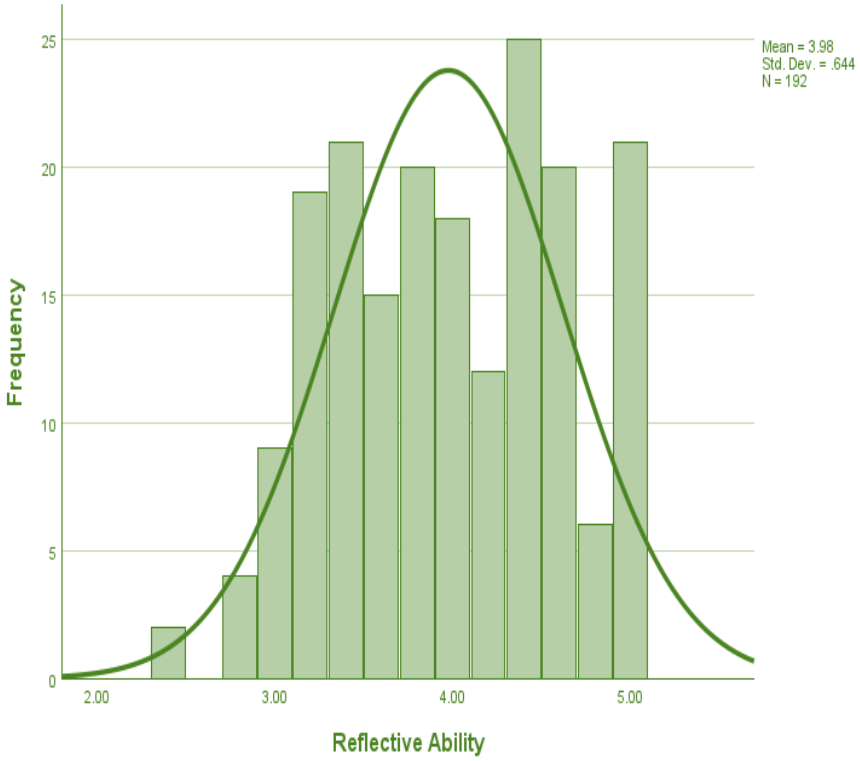


Figure 4.3 showed a mean score value (3.96) and a standard deviation (0.644). The high mean indicates that lecturers reported reflective abilities during research studies. The low standard deviation value is an indication that data was normally distributed thus confirming the assumption that the data qualified for parametric analysis. Thus, data were appropriate for linear regression analysis.

4.3.4 Communication skills. Communication skills; the fifth element of research competence was studied with 5 indicators. The results are in Table 4.5.

Table 4.5

Descriptive Statistics for Communication Skills

Reflective ability		**SD**	**D**	**MA**	**A**	**SA**	**Mean**
I can write a standard manuscript in my discipline	F	6	5	45	64	72	3.99
	%	3.1	2.6	23.4	33.3	37.5	
It is difficult for me to write a research report well aligned to the standards of academic writing	F	60	47	48	21	16	2.41
	%	31.3	24.5	25.0	10.9	8.3	
I can make a presentation at a conference in accordance with international research standards	F	6	8	33	87	58	3.95
	%	3.1	4.2	17.2	45.3	30.2	
It is difficult for me to write and publish a book chapter with international peer reviewed journals	F	60	54	49	20	9	2.29
	%	31.3	28.1	25.5	10.4	4.7	
It is difficult for me to write and publish a book with international peer reviewed journals	F	67	50	48	19	8	2.22
	%	34.9	26.0	25.0	9.9	4.2	

The results in Table 4.5 on whether lecturers could write a standard manuscript in their disciplines, cumulatively revealed that the majority percentage (70.8%) agreed while 23.4% moderately agreed and 5.7% disagreed. The high mean of 3.99 corresponded to agreed on the likert scale. Therefore, lectures could write a manuscript in accordance with the standards in their disciplines. Regarding to whether the lecturers found difficulty in writing research reports that met the standards of academic writing, the majority (55.8%) disagreed while 25.0% moderately agreed and 19.2% agreed. The low mean of 2.41 suggested that the lecturers disagreed to finding difficulty in writing research reports that met the standards of academic writing.

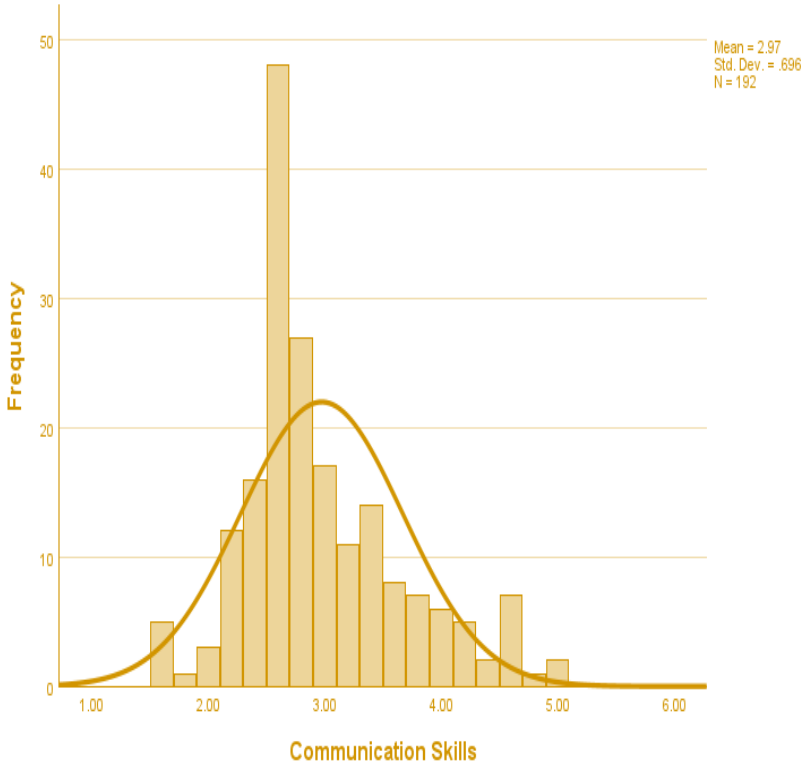
Concerning whether lecturers could make presentations at conferences in accordance with the standards in their disciplines, the larger percentage (75.5%) agreed while 17.2% moderately agreed and 7.3% disagreed. The high mean of 3.95 suggested that lecturers could easily make presentations at conferences which were in accordance with the current standards in their academic

disciplines. As to whether lecturers found it difficult to write and publish a book chapter with international peer reviewed journals, the larger percentage (59.4%) disagreed, 25.5% moderately agreed whereas 15.1% agreed. The low mean of 2.29 implied that lecturers did not find any difficulty writing and publishing book chapters with international peer reviewed journals.

Regarding to whether lecturers found it difficult to write and publish a book with international peer reviewed journals, the larger percentage (60.9%) disagreed while 25.0% moderately agreed and 14.1% agreed. The low mean of 2.22 suggested that did not find difficulty in the process of writing and publish books with international peer reviewed journals. To assess how overall the lecturers rated themselves on their communication skills, an average index value for all the 5 indicators in the construct was calculated. The histogram (Figure 4.4) shows the overall mean while normality shows the distribution of the responses.

Figure 4.4.

Histogram for Communication Skills

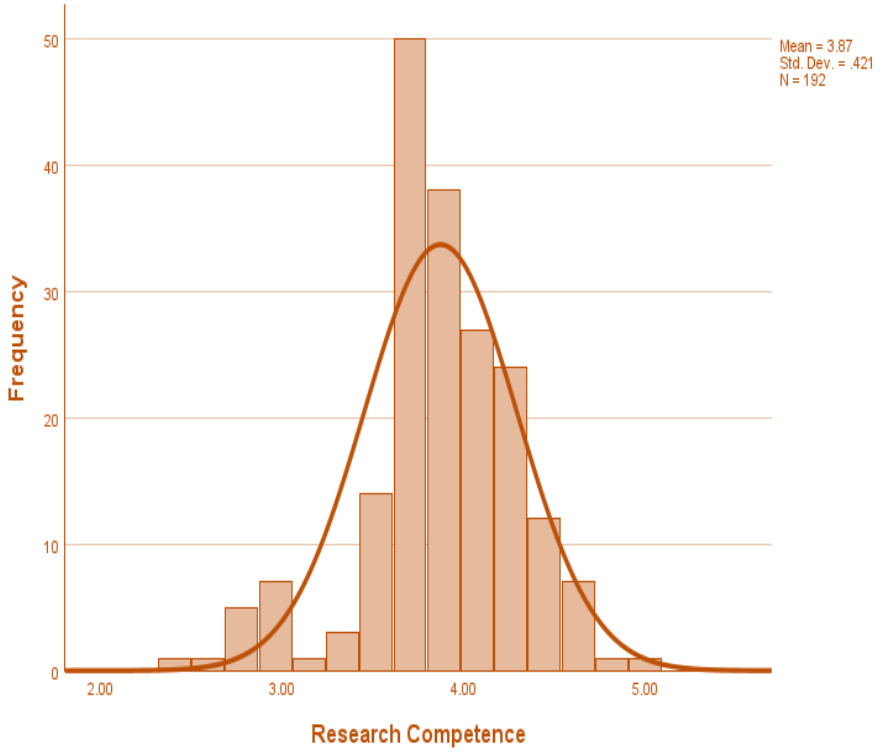


The values in Figure 4.4 indicate a mean of 2.97 and standard deviation of 0.696 confirmed the normality of the results. The moderate mean meant that the communication skills of lecturers were average while a low standard deviation indicated normality of the results hence the results confirmed the parametric condition of normality thus were appropriate for linear analysis.

4.3.5 Research Competence. To determine how the lecturers rated their research competence overall, an average index value for all the indicators of five constructs was calculated. The histogram (Figure 4.5) shows the mean (overall) and the normality of the findings.

Figure 4.5

Histogram for Research Competence



The values in Figure 4.5 indicate a mean (3.87) and standard deviation (0.421) confirmed the normality of the results. The high mean meant that the research competence of lecturers was high

while a low standard deviation indicated normality of the results. With the results normally distributed, they confirmed the parametric condition of normality hence appropriate for linear analysis. The results were the basis for developing the structural model for research competence.

4.3.6 Research Competence Structural Model. This was created to determine the measures of the lecturers' research competence. The relevant indicators of the constructs assessing this variable are shown in Figure 4.6.

Figure 4.6

Research Competence Structural Equation Model

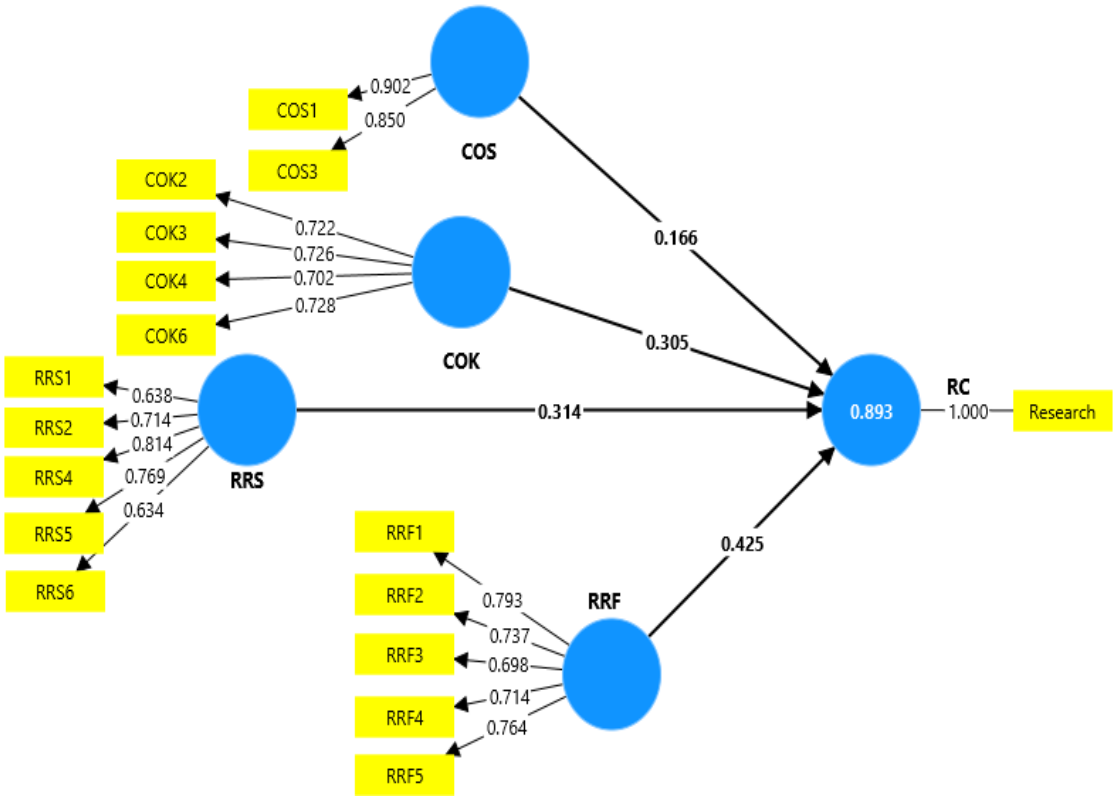


Figure 4.6 presents research competence in consideration of a four-dimensional variable covering knowledge of research content, research review skills, reflective ability and communication skills. Factor loadings showed that for knowledge of research content, only four of the six indicators were

retained (COK2, COK3, COK4, and COK6). For research review skills, all the five indicators (RRS1-RRS5) were retained, the same was observed for reflective ability while for communication skills only 2 indicators (COS1 and COS3) were retained of the five total indicators of this construct. The indicators that were retained had factor loadings greater than 0.50; the lowest accepted level (Cheung et al., 2024) and it explains at least 50% of the variance of each indicator. Thus, the indicators that were retained for the different dimensions of the model were the only valid measurements of the respective research competence measures.

4.3.7 Variation of Research Competence accorinding to the Socio-demographic Characteristics of Lectrurers

To determine whether the various sociodemographic characteristics such as age, gender, , level of education, experience and designation were associated with research competence of lecturers, several analytical tests were conducted as follows:

Gender and research competences

A students t-test was conducted to assess whether any significant difference exixted between research competences of lecturers of different gender. The test results which included the mean, standard deviation, computed students t-value and the P-value are summarized in Table 4.6.

Table 4.6

Students t-test Result for Gender and Research Competence

Gender	Mean	SD	t	P-value
Male	3.886	0.436	0.530	0.298
Female	3.854	0.402		

Findings in Table 4.6 show that the males had a higher mean score (mean = 3.886, SD = 0.436) compared to their female counterparts (mean = 3.854 and SD = 0.492), an indication that male lecturers had slightly a higher level of research competences than female lecturers. Nonetheless, the low t-value (0.530) and a higher P-value = 0.298 which is greater than 0.05 revealed that the difference between the mean scores was not statistically significant, hence gender is not a determinant factor of research competence.

Age group and research competence

To examine whether there was any significant existed difference between age groups of lecturers and their research competence, oneway anova test was done. The results were summarized by mean, standard deviation, as well as computed F and P-values as in Table 4.7.

Table 4.7

Oneway ANOVA Test Result for Age Groups of Lecturers and their Research Competence

Age groups	Mean	SD	F	P-value
29 and Below	3.656	0.406	2.501	0.061
30 to 39	3.888	0.460		
40 to 49	3.837	0.424		
50 and above	3.978	0.346		

The test results in Table 4.7 show that lecturers above 50 years of age had a higher mean score (mean = 3.978, SD = 0.346) compared to those below 50 years which means that the lecturers above 50 had higher levels of research competences in comparison with lecturers who were below 50 years. Those below 29 years exhibited the lowest mean value (mean 3.656, and SD = 0.406) an indication that their levels of research competences were lower than the rest of the age groups from

30 years and above. Nonetheless, the ANOVA test results showed a low F-value (2.501) and a high P-value < 0.061 which meant that the difference in the means was not significant significant, hence age is not a determinat factor of research competence among lecturers.

Levels of education and research competence

To determine if any significant difference existed between the lecturers' levels of education and their research competence, oneway anova test was carried out. The results were summarized by mean, standard deviation, as well as computed F and P-values as in Table 4.8.

Table 4.8

Oneway ANOVA Test Result for Lecturers' Levels of Education and their Research Competence

Levels of Education	**Mean**	**SD**	**F**	**P-value**
Bachelor's	3.467	0.592	9.310	<0.001
Master's	3.781	0.513		
PhD	3.957	0.304		

Results in Table 4.8 showed that the mean score (mean = 3.957 and SD = 0.304) was highest for the lecturers who held a PhD compared to those with master's degree (mean= 3.781, SD = 0.513) and those with a bachelor's degree respectively with a mean value (mean = 3.467 and SD = 0.592). The ANOVA test results indicated a high F value = 9.310 and a very low P-value < 0.001 which meant that the difference between the mean scores was statistically significant. Therefore, the levels of education were determinant factors for research competences of lecturers.

Lecturers' Designation and Research Competence

To determine whether a significant difference exixted between the lecturers' designations and their research competence, Oneway ANOVA test was carried out. The results were summarized by mean, standard deviation, as well as computed F and P-values as in Table 4.9.

Table 4.9

Oneway Anova Test Result for Lecturers' Designation and their Research Competence

Designation	Mean	SD	F	P-value
Teaching assistant	3.314	0.596	11.092	<0.001
Assistant lecturers	3.895	0.409		
Lecturer	3.964	0.283		
Senior Lecturers	3.753	0.042		
Associate Professors	4.069	0.471		
Professors	3.815			

The test results in Table 4.9 shows the mean score ws highest among associate professor (mean = 4.069, SD = 0.471) followed by lecturers (mean = 3.964, SD = 0.283) and the lowest mean score was among teaching assistants (mean = 3.314, SD = 0.596). The ANOVA test results indicated a high F value (11.092) and a very low P-value < 0.001; meaning that the difference in the mean scores values was statistically significant. Therefore, designation of lecturers is a determinant of their research competences.

Lecturers' experience and research competence

In oder to assess whether the lecturers' levels of experience were determinants of their research competences, Oneway ANOVA test was carried out. The results were summarized by mean, standard deviation, as well as computed F and P-values as in Table 4.10.

Table 4.10

Oneway ANOVA Test Result for the Lecturers' Experience and Research Competence

Designation	Mean	SD	F	P-value
Less than 3 years	3.523	0.474	4.888	0.003
3 to 5 years	3.859	0.397		
6 to 10 years	3.961	0.326		
More than 10 years	3.855	0.501		

Test results in Table 4.10 show the highest mean score value (mean = 3.961, SD = 0.326) among lecturers with experience above 6 years and the lowest mean score value (mean = 3.523, SD = 0.474) among lecturers with experience of less than 3 years. The ANOVA test results show a high F = 4.88 and P value = 0.003 which is less than 0.05; meaning that a statistically significant difference exixted between mean values. This signifies that the level of experience among lecturers is a determinant factor of their research competence.

4.4 Institutional Research Culture and Research Competence

The first specific objective of the study examined the influence of institutional research culture on the research competence of lecturers of Kyambogo University. Institutional research culture was conceptualized by research artefacts, research basic underlying assumptions and research espoused

beliefs and values. The descriptive findings, average index value and inferential analysis results follow:

4.4.1 Research Artefacts. Research artefacts; the first element of institutional research culture was studied with 5 indicators. The results follow in Table 4.11.

Table 4.11

Descriptive Statistics for Research Artefacts

Research artefacts		**SD**	**D**	**MA**	**A**	**SA**	**Mean**
The university has satisfactory research infrastructure	F	26	47	39	42	38	3.10
	%	13.5	24.5	20.3	21.9	19.8	
There is a furnished science laboratory at my university	F	28	63	71	16	14	2.61
	%	14.6	32.8	37.0	8.3	7.3	
The university values research innovations	F	1	40	59	66	26	3.40
	%	0.5	20.8	30.7	34.4	13.5	
There are clear structures for managing research	F	34	25	73	45	15	2.91
	%	17.7	13.0	38.0	23.4	7.8	
The research technologies are kept up to date	F	20	33	71	52	16	3.06
	%	10.4	17.2	37.0	27.1	8.3	

Regarding the adequacy of research infrastructure (Table 4.11) findings revealed that the largest percentage (41.7%) agreed, 20.3% moderately agreed, and 63.8% disagreed. The moderate mean (3.10) corresponds to moderate agreement on the likert scale. Thus, the lecturers were skeptical about the sufficiency of research infrastructure. Regarding the presence of a furnished science laboratory, the majority (47.4%) disagreed, 37.0% moderately agreed, and 15.6% agreed. The low mean value (2.61) indicated that the lecturers generally tended to disagree with the statement that had a furnished science laboratory.

With regards to whether the value was attached research innovations, the larger percentage (47.9%) agreed, 30.7% moderately agreed while 21.3% disagreed. The moderate mean (3.40) suggested that lecturers were not sure of the value attached to research innovations by the university. Regarding to whether the university had clear structures and systems for managing research processes and output, the responses were fairly evenly distributed: 38.0% moderately agreed, 31.2% agreed while 30.0% disagreed. The moderate mean (2.91) suggests that lecturers were generally neutral on this issue, neither agreeing nor disagreeing. Similarly, when asked if the university kept research technologies up to date, responses were also relatively balanced, with 37.0% moderately agreeing, 35.4% agreeing, and 27.6% disagreeing. The resulting mean of 3.06 indicates a neutral stance among lecturers toward the university's efforts in maintaining up-to-date research technology. To assess the overall status of the university’s research infrastructure, an average index for all the five indicators representing the construct was calculated. The histogram in Figure 4.7 shows the mean (overall) and illustrates the distribution of responses.

Figure 4.7

Histogram for Research Artefacts

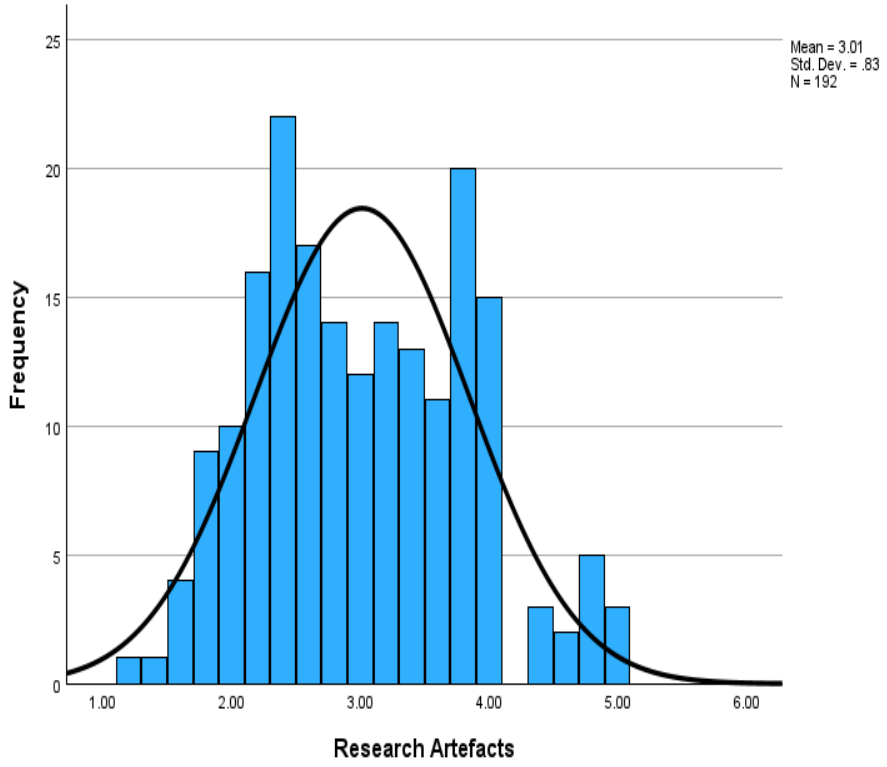


Figure 4.7 presents a mean score of 3.01 with a standard deviation of 0.83. The moderate mean suggests that lecturers were neutral regarding whether the university had well-established artefacts. The relatively low standard deviation indicates a normal distribution of the data, supporting the assumption of normality needed for parametric analysis. Thus, the data were appropriate for linear analysis.

4.4.2 Espoused beliefs and values. This was conceived as the second construct of institutional research culture and was studied with nine indicators. The results are in Table 4.12.

Table 4.12

Descriptive Statistics for Research Espoused Beliefs and Values

Espoused beliefs and values		**SD**	**D**	**MA**	**A**	**SA**	**Mean**
I am conversant with the research policy of the university	F	22	39	54	41	36	3.16
	%	11.5	20.3	28.1	21.4	18.8	
The research agenda has influenced my research activities	F	26	40	66	45	15	2.91
	%	13.5	20.8	34.4	23.4	7.8	
I have taken advantage of the seminars at my department to share my research findings	F	9	52	89	20	22	2.97
	%	4.7	27.1	46.4	10.4	11.5	
The exchange programmes at my university have enhanced my research competence	F	45	45	63	27	12	2.56
	%	23.4	23.4	32.8	14.1	6.3	
The univerity monitors my research activities	F	39	47	63	18	25	2.70
	%	20.3	24.5	32.8	9.4	13.0	
The university has supported me to access external research funding	F	22	97	55	21	15	2.63
	%	11.5	41.1	28.6	10.9	7.8	
The university has supported me to access internal research funding	F	12	60	73	35	12	2.87
	%	6.3	31.3	38.0	18.2	6.3	
I have identified a research mentor	F	21	26	57	54	34	3.28
	%	10.9	13.5	29.7	28.1	17.7	
I have a research team my university	F	13	32	55	77	15	3.26
	%	6.8	16.7	28.6	40.1	7.8	

Table 4.12 presents results on whether the lecturers were conversant with their research policy, cumulatively revealed that the larger percentage (40.2%) agreed, while 28.1% moderately agreed and 31.8% disagreed. The moderate mean (3.16) corresponded to moderately agree on the likert scale. Therefore, lecturers were fairly conversant with the research policy. With regards to whether the university's research agenda had influenced their research skills, the responses were fairly

evenly split: 34.4% of participants moderately agreed, 34.3% disagreed, and 31.2% agreed. The moderate mean score of 2.91 indicates that lecturers somewhat agreed that the university's research agenda had an influence on their research activities and skills. Concerning whether departmental research seminars provided opportunities to share research findings, a larger proportion (46.4%) moderately agreed, followed by 31.8% who disagreed and 21.9% who agreed. The moderate mean of 2.97 suggests that lecturers were generally neutral on whether these seminars offered them a platform to disseminate research findings.

Concerning exchange programmes, they had enhanced the lecturers' research competence, the overall majority (46.8%) disagreed, followed by 32.8% who moderately agreed and 20.4% who agreed. The moderate mean (2.56) indicates that lecturers were generally neutral, neither agreeing nor disagreeing about the impact of exchange programmes on their research competence. In relation to whether the university regularly monitored research activities, 44.8% of respondents disagreed, 32.8% moderately agreed, and 22.4% agreed. The moderate mean of 2.70 suggests that lecturers held a neutral view on the university's monitoring of research activities. As for whether lecturers had received support from the university to access external research funding, a majority of 52.6% disagreed, 28.6% moderately agreed, and 18.7% agreed. The resulting moderate mean (2.63) revealed that lecturers were neutral about the support offered by the university to access external research funding.

With regards to whether lecturers had been supported to access internal research funding, 38.0% and 37.6% moderately agreed and disagreed respectively and 24.5% agreed. The moderate mean (2.87) suggested that lecturers were skeptical about the support offered by the university to get internal research funding. Regarding whether the lecturers had identified research mentors, the majority (45.8%) agreed, followed by 29.7% who moderately agreed while 24.4% disagreed. The

moderate mean (3.28) indicates that lecturers were generally neutral about having research mentors at the university. Similarly, when asked whether they had a research team, 47.9% agreed, 29.7% moderately agreed and 23.5% disagreed. The moderate mean (3.26) also suggests that lecturers neither agreed nor disagreed to having a research team. To determine how overall the espoused beliefs and values influenced lecturers research competences, an average index value for the nine indicators was calculated. The histogram (Figure 4.8) shows the overall mean and normality shows the distribution of the responses.

Figure 4.8

Histogram for Research Espoused Beliefs and Values

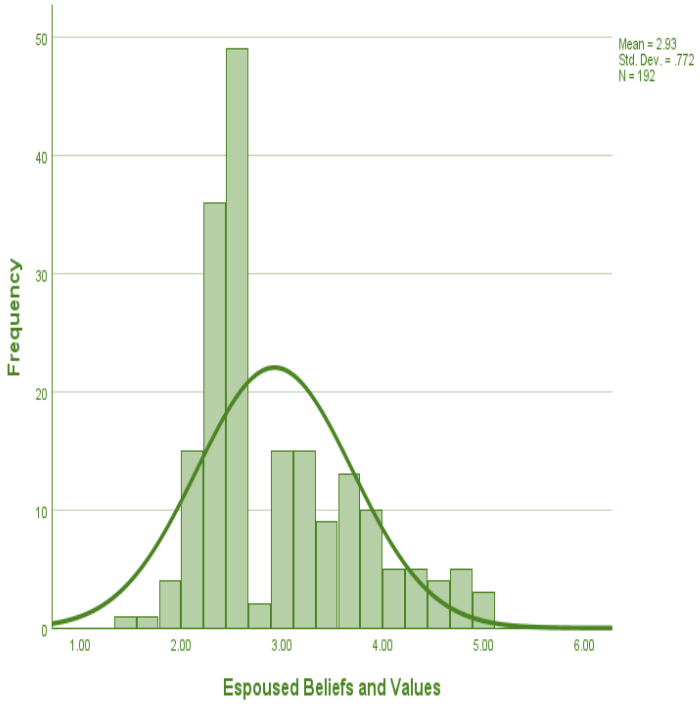


Figure 4.8 shows a mean (2.93) and a standard deviation (0.772). The moderate meant that were skeptical about the research espoused beliefs and values of the university. The low standard deviation was an indication of normality of data meaning that it was approriate for linear analysis.

4.4.3 Research Basic Underlying Assumptions. was the third construct of institutional research culture with seven indicators as shown in Table 4.13.

Table 4.13

Descriptive Statistics for Research Basic Underlying Assumptions

Research Basic Underlying Assumptions		**SD**	**D**	**MA**	**A**	**SA**	**Mean**
There are support systems for research	F	27	32	65	32	36	3.09
	%	14.1	16.7	33.9	16.7	18.8	
In this university mutual research responsibility and shared objectives are emphasized	F	3	48	83	39	19	3.12
	%	1.6	25.0	43.2	20.3	9.9	
The university research objectives have been communicated to all staff	F	1	31	58	80	22	3.47
	%	0.5	16.1	30.2	41.7	11.5	
The staff members are involved in decision concerning research	F	4	56	57	56	19	3.16
	%	2.1	29.2	29.7	29.2	9.9	
The staff share ideas and suggestions on research	F	14	42	52	62	22	3.19
	%	7.3	21.9	27.1	32.3	11.5	
A mutual relationship exists between management and academic staff on research issues	F	8	52	51	62	19	3.17
	%	4.2	27.1	26.6	32.3	9.9	
There are support mechanism for staff to get highly involved in research	F	5	38	34	43	72	3.72
	%	2.6	19.8	17.7	22.4	37.5	

The findings in Table 4.13 regarding whether the university had support systems for research revealed relatively balanced responses: 35.5% agreed, 33.9% moderately agreed but 30.8% disagreed. The moderate mean (3.09) suggested that lecturers were uncertain about the existence of such support systems. In relation to whether the mutual research accountability and shared objectives were promoted, results showed that most respondents (43.2%) moderately agreed, 30.2% agreed but 26.6% respondents disagreed. The moderate mean score (3.12) indicated that lecturers were unsure about the extent to which the university emphasized mutual research responsibility and shared goals. Regarding whether the university management had shared its

research objectives with the academic staff, a larger proportion (53.2%) agreed, 30.2% moderately agreed but 16.6% respondents disagreed. Despite this, the moderate mean of 3.47 still suggests uncertainty among lecturers about the clarity and reach of that communication. On whether staff were involved in the university's research decision-making processes, 39.1% agreed, 29.7% moderately agreed, and 31.3% disagreed. The resulting moderate mean of 3.16 reflects a neutral position, indicating that lecturers neither agreed nor disagreed on their involvement in research-related decisions.

With regards to whether the staff were motivated to share and engage key stakeholders on their research ideas, the larger proportion of the respondents (43.8%) agreed, 29.2% disagreed but 27.1% respondents moderately agreed. The moderate mean (3.19) suggested that the lecturers skeptical about the comments that they were were given chance to share ideas on research. With regard to whether a mutual relationship existed between university management and academic staff on research issues, a larger proportion (42.2%) agreed, 31.3% disagreed, and 26.6% moderately agreed. The mean score of 3.17 suggested the presence of a mutual relationship between university management and academic staff in relation to research activities. Regarding whether the university had implemented support mechanisms to promote staff engagement in research, the majority (59.9%) agreed, while 22.4% disagreed and 17.7% moderately agreed. The relatively high mean of 3.72 indicates that lecturers acknowledged and valued the university's efforts in supporting their involvement in research activities. To determine how overall the lecturers rated their research basic underlying assumptions, an average index was calculated for the seven indicators describing the construct. The histogram (Figure 4.9) shows the overall mean and as well as normality of the responses.

Figure 4.9

Histogram for Research Basic Underlying Assumptions

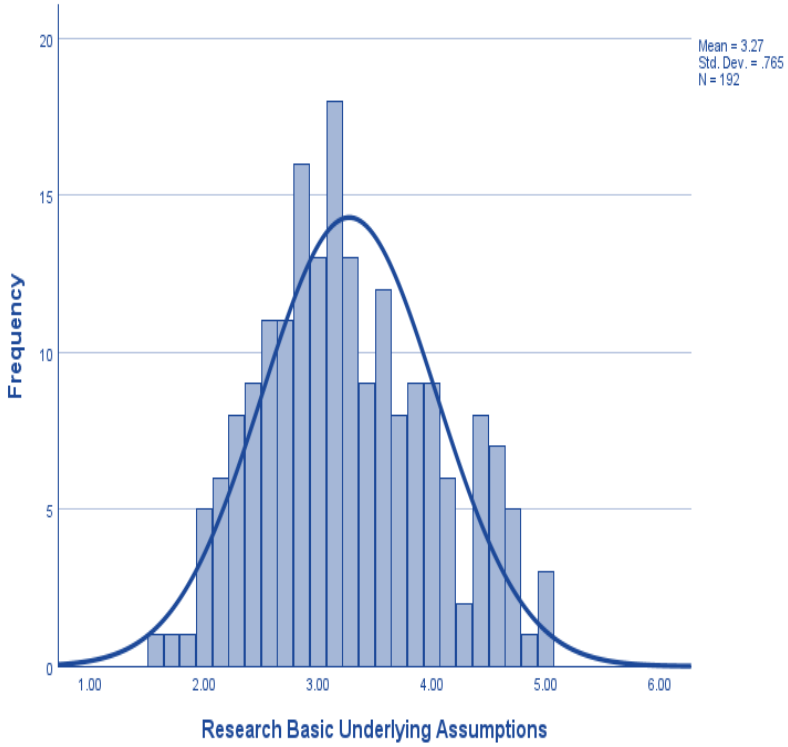
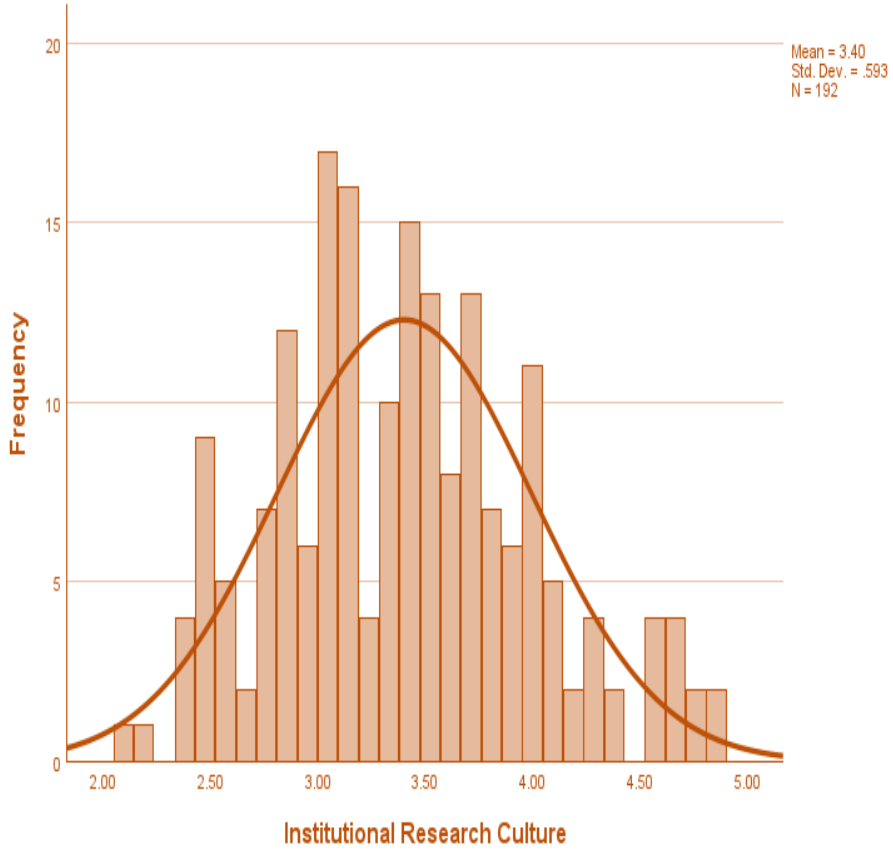


Figure 4.9 presents a mean score (3.27) and a standard deviation (0.765). The average mean suggested that lecturers held moderate basic underlying assumptions about research. The relatively low standard deviation indicated that the data was normally distributed hence qualifying for parametric and linear regression analysis.

4.4.4 Institutional Research Culture. To determine how lecturers overall rated the institutional research culture at Kyambogo University, an average index value for all the three constructs of the variable was calculated. The histogram (Figure 4.10) displays the mean (overall) and normality of data.

Figure 4.10

Histogram for Institutional Research Culture



The results in Figure 4.10 show a mean score (3.40) and a standard deviation (0.593). The average mean suggests that lecturers viewed the research culture of the university as moderate. The low standard deviation indicated normality of data and that it qualifies for parametric and linear analysis.

4.4.5 Institutional Research Culture Structural Model. Using a structural equation model, institutional research culture was analysed. Figure 4.11 displays the relevant indicators of the constructs used to assess this variable.

Figure 4.11

*Institutional Research Culture Structural Equation Mod*el

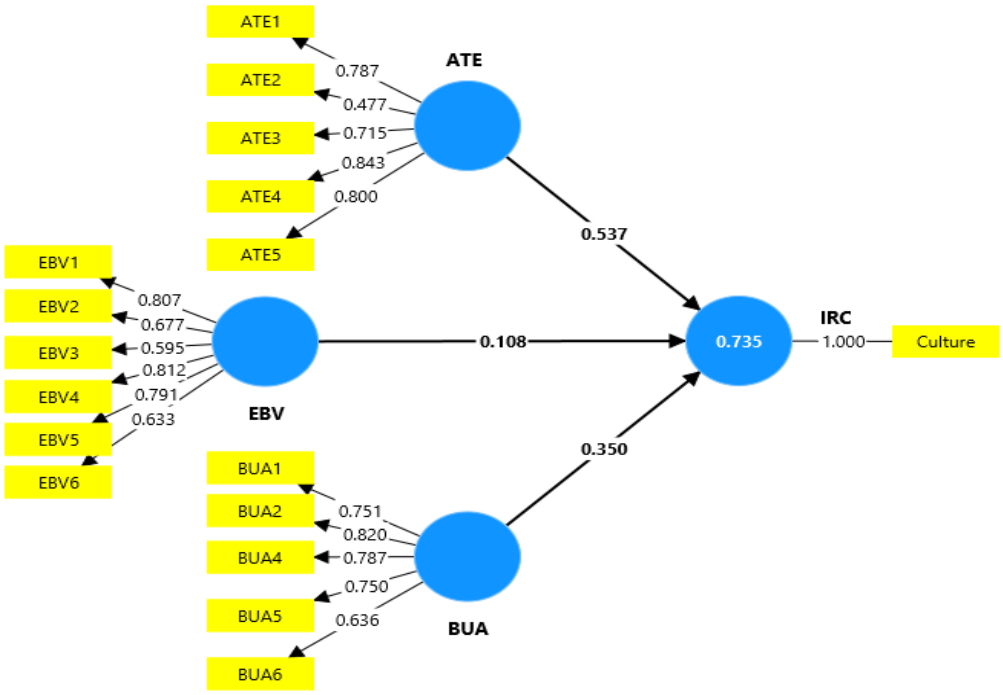
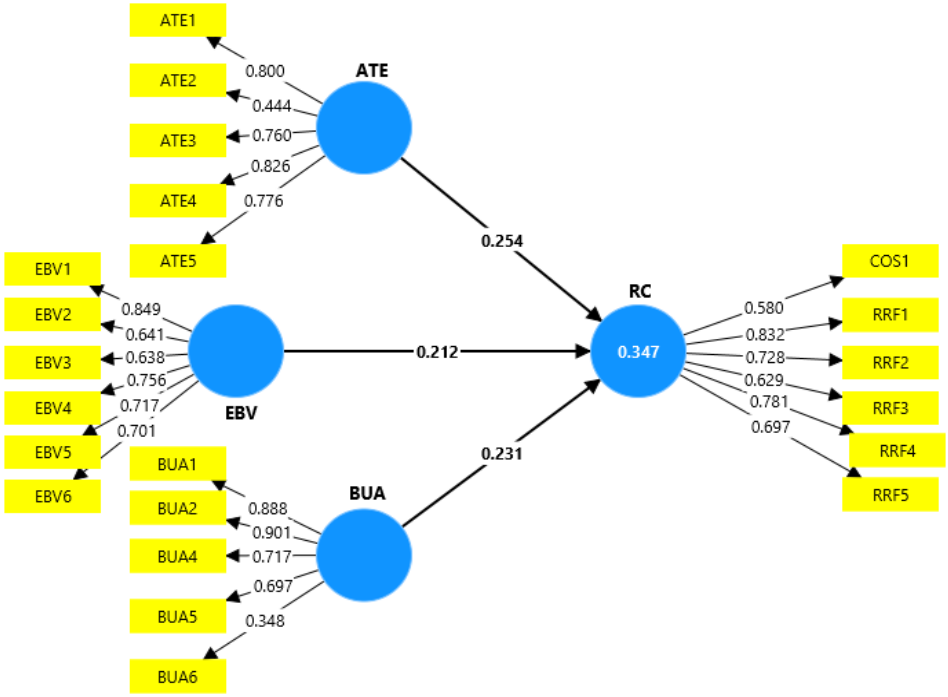


Figure 4.11 showed that institutional research culture considered a tri-dimensional concept that covers; research artefacts, research basic underlying assumptions and research espoused beliefs and values. Factor loadings showed that for the research artefacts, only 5 indicators of the 6 were retained (ATE1 to ATE5) while one indicator (ATE6) was dropped. For research espoused beliefs and values, six indicators (EBV1 to EBV6) of nine were retained while three indicators (EBV7, EBV8, and EBV9) were removed. Regarding the basic underlying assumptions of research, five out of seven indicators (BUA1, BUA2, BUA4, BUA5, BUA6) were kept, with BUA3 and BUA7 excluded. All the retained indicators had factor loadings greater than 0.50, which is the minimum acceptable threshold according to Cheung et al. (2024). Therefore, these retained indicators were incorporated into the tri-dimensional model and demonstrated valid measurements.

4.4.6 Structural Equation Model for institutional Research Culture and Research Competence of Lecturers. Figure 4.12 provides a structural equation model on the influence of institutional research culture on the research competence of lecturers of Kyambogo University.

Figure 4.12

Structural Equation Model for Institutional Research Culture and the Research Competence of Lecturers



The structural equation model (Figure 4.12), which explores the link between institutional research culture and lecturers' research competences, identifies three indicators of institutional research culture: research artefacts, basic underlying assumptions and espoused beliefs and values. Lecturers' research competences was defined by two components; reflective abilities and communication skills. The rest of the constructs ie knowledge of research content and the research review skills were excluded from the model. The results of the model are detailed in Table 4.14.

Three hypotheses were tested, suggesting that research artefacts (H1), espoused beliefs and values (H2), and basic underlying assumptions (H3) have a significant effect on research competence.

Table 4.14

Institutional Research Culture and Research Competence Path Estimates

	β	**T**	**P values**
ATE⟶ RC	0.254	2.128	0.033
BUA⟶ RC	0.231	2.748	0.006
EBV⟶ RC	0.212	2.037	0.042
$R^2 = 0.347$			
R^2 Adjusted =0.336			

Table 4.14 reveals that research artefacts ($\beta = 0.254$, $t = 2.128$ $p = 0.033 < 0.05$), research basic underlying assumptions ($\beta = 0.231$, $t = 2.748$, $p = 0.006 < 0.05$) and research espoused beliefs and values ($\beta = 0.212$, $t = 2.037$, $p = 0.042 < 0.05$) had a positive significant influence on lecturers' research competence. The adjusted R^2 indicated that three dimensions of institutional research culture accounted for 33.6% (adjusted $R^2 = 0.336$) of the variations in lecturers' research competences. The beta values revealed that research artefacts had a stronger impact on lecturers' research competences compared to basic underlying assumptions and espoused beliefs, correspondingly. Therefore, the hypothesis stating that institutional research culture significantly influences lecturers research competences was supported.

4.5 Technology Applications Use and Research Competence

The second objective of the study was to evaluate how the use of technology applications affects the research competence of lecturers at Kyambogo University. The use of technology applications was examined through three dimensions: that is perceived usefulness of technology applications, perceived ease of their use, and behavioural intention to use them. The following sections present the descriptive results for these three constructs, the overall average index, and the inferential analysis.

4.5.1 Perceived Use of Technology Applications. Perceived use of technologies was the first and it was studied using eight indicators. The results follow in Table 4.15.

Table 4.15

Descriptive Statistics for Perceived Use of Technology Applications on Research Competence

Perceived use of technology applications		**SD**	**D**	**MA**	**A**	**SA**	**Mean**
I find computer and internet applications such as google forms, monkey survey and other useful in collecting data for my research	F	6	10	57	84	35	3.69
	%	3.1	5.2	29.7	43.8	18.2	
I find computer applications such as Excel, Epi Info and others useful in questionnaire design, data entry and validation, data analysis, mapping and graphing and creation of reports	F	4	13	29	84	62	3.97
	%	2.1	6.8	15.1	43.8	32.3	
I find computer and internet applications useful in the applying for ethical approval to a Scientific Institutional Review Board or Research Ethics Committee	F	00	13	22	71	86	4.20
	%	0.0	6.8	11.5	37.0	44.8	
I find computer applications such a Access, Integral and others useful in storing data	F	00	14	31	79	68	4.05
	%	0.0	7.3	16.1	41.1	35.4	
Computer applications such as SAS, SPSS, STATA, SmartPLS, Eviews, Nvivo, Atlas Ti, and others are useful to me when analyzing data	F	3	8	65	56	60	3.84
	%	1.6	4.2	33.9	29.2	31.3	
Computer applications such as Zotero, Mendeley, Endnote and others useful to me to carry out citation and referencing	F	1	11	26	79	75	4.12
	%	0.5	5.7	13.5	41.1	39.1	
I find online e-resources such as online journals and publishers websites useful in giving clear guidance to manuscript writing and dissemination of results	F	00	7	19	92	74	4.21
	%	0.0	3.6	9.9	47.9	38.5	
Online databases such as Academia, ResearchGate, and others useful in keeping and updating research profile of my published articles, books and book chapters in terms of reads, citations and the h-impact	F	11	8	23	71	79	4.04
	%	5.7	4.2	12.0	37.0	41.1	

The results in Table 4.15 on whether the computer and internet applications such as google forms, monkey survey and others useful in collecting data for research cumulatively revealed that the larger percentage (62%) agreed while 29.7% moderately agreed and 8.3% disagreed. The high mean (3.69) corresponds with agree on the Likert scale. Therefore, lecturers indicated that they were using computer and internet applications such as google forms, monkey survey and other useful tools in collecting data for their various research studies. As to whether lecturers find computer applications such as Excel, Epi Info and others useful in questionnaire design, data entry and validation, data analysis, mapping and graphing and creation of reports, the majority (76.1%) agreed while 15.1% moderately agreed while 8.9% disagreed. The high mean (3.97) suggested that lecturers acknowledged the usefulness of computer applications specifically such as Excel, Epi Info and others in questionnaire design, data entry and validation, data analysis, mapping and graphing and creation of reports.

Regarding to whether the computer and internet applications were useful in the application for ethical approval to Scientific Institutional Review Board or Research Ethics Committees, the larger percentage (81.8%) agreed, 11.5% moderately agreed but 6.8% disagreed respectively. The high mean (4.02) suggested that the lecturers considered computer and internet applications useful in the applying for ethical approval to the Scientific Institutional Review Boards or Research Ethics Committees. Regarding whether the usefulness of computer applications such a Access, Integral and others in storing data, the larger proportion of respondents (76.5%) agreed, 16.1% moderately agreed but 7.3% disagreed. The high mean (4.05) suggested that the lectures considered computer applications majorly Access, Integral and others useful in storing data.

Concerning the use of technology applications such as SAS, SPSS, STATA, SmartPLS, Eviews, Nvivo, Atlas Ti, and others in data analysis, the majority percentage (60.5%) agreed while

33.9% moderately agreed but 5.8% disagreed. The high mean of 3.84 meant that lecturers considered technology applications such as SAS, SPSS, STATA, SmartPLS, Eviews, Nvivo, Atlas Ti, and others in data analysis to be useful in data analysis. Regarding the use of technology applications such as Zotero, Mendeley, Endnote and others in citation and referencing, the majority percentage (80.2%) agreed while 13.5% moderately agreed and 6.2% disagreed. The high mean of 4.12 meant that lecturers considered technology applications such as Zotero, Mendeley, Endnote and others useful in citation and referencing. As to whether lecturers perceive the online e-resources such as online journals and publishers websites useful in giving clear guidance to manuscript writing and dissemination of research results, the greatest proportion (86.4%) agreed while 9.9% moderately agreed and 3.6% disagreed. The high mean of 4.21 meant that lecturers considered technology applications such as Zotero, Mendeley, Endnote and others useful in citation and referencing

With regard to whether lecturers found online databases such as Academia, ResearchGate, and others useful in keeping and updating research profile of the published articles, books and book chapters in terms of reads, citations and the h-impact, the greatest proportion (78.1%) agreed while 12.0% moderately agreed and 9.9% disagreed. The high mean of 4.04 meant that lecturers considered online databases such as Academia, ResearchGate, and others to be useful in keeping and updating research profile of my published articles, books and book chapters in terms of reads, citations and the h-impact. To determine how overall the lecturers rated their perceived the use of technology applications in research, an average index value was calculated for the eight indicators describing the construct. The histogram (Figure 4.13) shows the mean (overall) and normality distribution of the responses.

Figure 4.13

Histogram for Perceived Use of Technology Applications on Research Competence

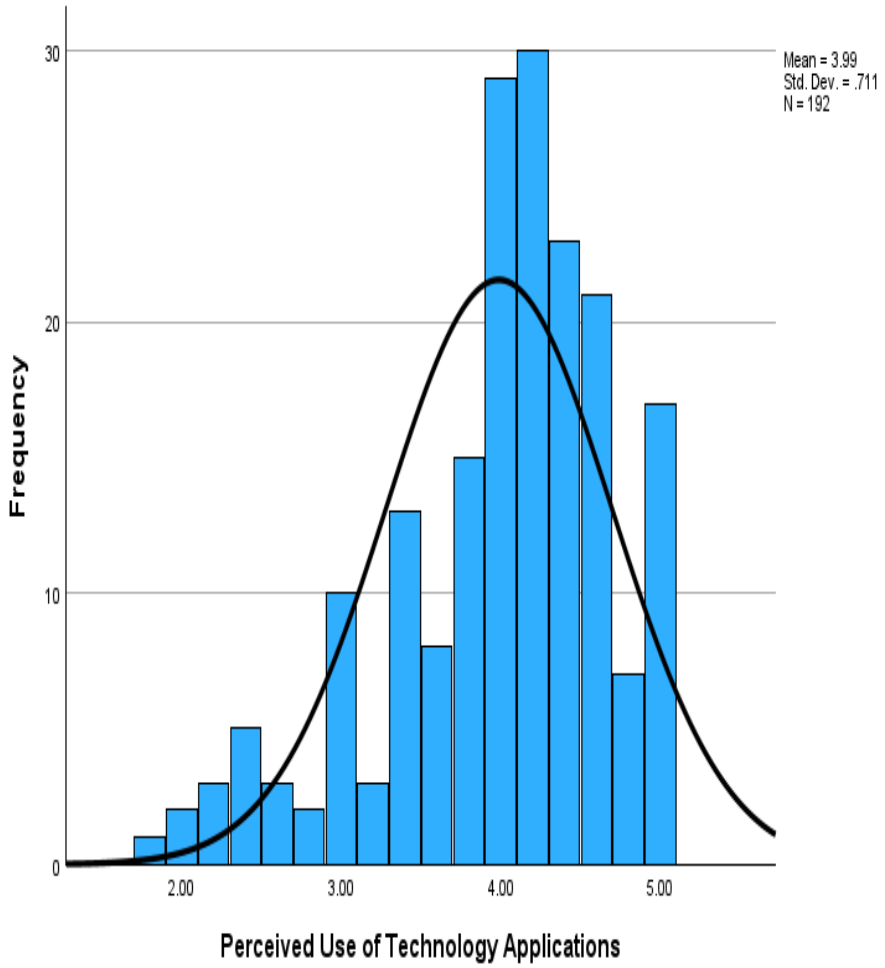


Figure 4.13 show a mean score (3.99) and a standard deviation (0.711). The high mean indicated that the lecturers perceived technology applications to be useful in research. The low standard deviation revealed that the data was normally distributed and qualified for both parametric and linear analysis.

4.5.2 Perceived Ease of Use of Technology Applications. Perceived ease of technologies use was the second element of technology applications and it was studied with eleven indicators as shown in Table 4.16.

Table 4.16

Descriptive Statistics for Perceived Ease of Use of Technology Applications

Perceived ease of use of technology applications		**SD**	**D**	**MA**	**A**	**SA**	**Mean**
I find computer and internet applications such as Grammarly, quill bot, google forms and plagiarism checker very easy to use during my research	F	2	5	67	86	32	3.73
	%	1.0	2.6	34.9	44.8	16.7	
I can easily use computer and technology application such as Scopus, African Journals Online, Google Scholar, Science Direct, PubMed, Embase, PsycINFO and others in carrying out extensive literature review	F	6	7	60	95	24	3.65
	%	3.1	3.6	31.3	49.5	12.5	
I can effectively use computer and internet applications such as google forms, monkey survey and others in collecting data for my research	F	15	19	32	51	75	3.79
	%	7.8	9.9	16.7	26.6	39.1	
I effectively use computer applications such as Excel, Epi Info and others in questionnaire design, data entry and validation, data analysis, mapping and graphing	F	12	18	42	57	63	3.73
	%	6.3	9.4	21.9	29.7	32.8	
I effectively use computer and internet applictions to apply for ethical approval to a Research Ethics Committee	F	2	16	21	80	73	4.07
	%	1.0	8.3	10.9	41.7	38.0	
I effectively use computer applications such as Paradox, Oracle, Informix, Integral and others to store data.	F	16	17	67	72	20	3.33
	%	8.3	8.9	34.9	37.5	10.4	
I effectively use computer applications such as SAS, SPSS, STATA, SmartPLS, Eviews and others when analyzing data	F	10	9	34	86	53	3.85
	%	5.2	4.7	17.7	44.8	27.6	
I effectively use Computer applications such as Nvivo, Atlas Ti, and others in the management and analysis of qualitative data	F	6	20	45	65	56	3.76
	%	3.1	10.4	23.4	33.9	29.2	
I effectively use computer applications such as Zotero, Mendeley, Endnote and others to carry out citation and referencing	F	1	17	17	91	66	4.06
	%	0.5	8.9	8.9	47.4	34.4	
I effectively use computer and internet applications to identify credible journals and publishers and to seek guidance in manuscript writing	F	3	8	60	61	60	3.87
	%	1.6	4.2	31.3	31.8	31.3	
I effectively use online databases such as Academia, ResearchGate, and others to create my research profile of my published articles, books and book chapters	F	4	10	20	90	68	4.08
	%	2.1	5.2	10.4	46.9	35.4	

Table 4.16 shows whether the lecturers perceived the use computer and internet applications such as Grammarly, quill bot, google forms and plagiarism checker during research to be very easy. It cumulatively revealed that the larger proportion of respondents (61.5%) agreed, 34.9% moderately agreed but 3.6% disagreed. The high mean (3.73) corresponded to agreed on the likert scale. Therefore, the lecturers perceived the use of computer and internet applications such as Grammarly, quill bot, google forms and plagiarism checker in the research process to be very easy. As to whether lecturers could easily use computer and technology application such as Scopus, African Journals Online, Google Scholar, Science Direct, PubMed, Embase, PsycINFO and others to carry out extensive literature review, the majority (62%) agreed, 31.3% moderately agreed but 6.7% disagreed. The high mean of 3.65 suggested that lecturers could easily use computer and technology application such as Scopus, African Journals Online, Google Scholar, Science Direct, PubMed, Embase, PsycINFO and others to carry out extensive literature review.

Concerning whether lecturers could effectively use computer and internet applications such as google forms, monkey survey and others in collecting data, the larger percentage (65.7%) agreed, 16.7% moderately agreed but 17.7% disagreed respectively. The high mean of 3.79 suggested that could effectively use computer and internet applications such as google forms, monkey survey and others to collecting data for their research. Regarding to whether lecturers could effectively computer applications such as Excel, Epi Info and others in questionnaire design, data entry and validation, data analysis, mapping and graphing and creation of reports, the larger percentage (62.5%) agreed while 21.9% moderately agreed and 15.7% disagreed. The high mean of 3.73 implied that lecturers could effectively use computer applications such as Excel, Epi Info and others in questionnaire design, data entry and validation, data analysis, mapping and graphing and generally creation of research reports.

With regards to whether lecturers perveived the use of computer and internet applications to apply for ethical approval to a specific Research Ethics Committee (REC) to be easy and effective, the larger proportion of respondents (79.7%) agreed while 10.9% moderately agreed but 9.3% disagreed. The high mean of 4.07 suggested that lecturers perceived themselves to be effective in the use computer and internet applications to apply for ethical approval to a Research Ethics Committee. Concerning whether lecturers perceived themselves to be effective users of computer applications such as Paradox, Oracle, Informix, Integral and others to store research data, the majority proportion (47.9%) agreed, 34.9% moderately agreed but 17.2% disagreed. The moderate mean of 3.33 meant that lecturers neither agreed nor disagreed to the effective use of computer applications such as Paradox, Oracle, Informix, Integral and others to store their research data. With regard to whether lecturers perceived the use of computer applications such as SAS, SPSS, STATA, SmartPLS, Eviews and others to be effective and easy when analyzing data, the majority percentage (72.4%) agreed, 17.7% moderately agreed but 9.9% disagreed. The high mean of 3.85 meant that lecturers perceived the use computer applications such as SAS, SPSS, STATA, SmartPLS, Eviews and others to be easy and effective when analyzing data.

As to whether lecturers perceived the use of computer applications such as Nvivo, Atlas Ti, and others in the management and analysis of qualitative data to be easy, the majority percentage (63.1%) agreed, 23.4% moderately agreed but 13.5% disagreed. The high mean of 3.76 meant that lecturers perceived the use of computer applications such as Nvivo, Atlas Ti, and others to be very easy and effective in the management and analysis of qualitative data. With regard to whether lecturers perceived the use of computer applications such as Zotero, Mendeley, Endnote and others to be effective and easy in the citation and referencing process, the majority percentage (81.8%) agreed, 8.9% moderately agreed but 9.4% disagreed. The high mean of 4.06 meant that

lecturers perceived the use computer applications such as Zotero, Mendeley, Endnote and others to be easy and effective in citation and referencing.

As to whether lecturers perceived the use of computer and internet applications to identify credible journals and publishers and to seek guidance in manuscript writing to be easy and effective, the majority (63.1%) agreed, 33.1% moderately agreed but 5.8% disagreed. The high mean of 3.87 suggested that lecturers perceived the use of computer and internet applications to identify credible journals and publishers to be easy and effective.

Concerning whether lecturers could easily and effectively use online databases such as Academia, ResearchGate, and others to create research profile of for their published articles, books and book chapters, the larger percentage (82.3%) agreed, 10.4% moderately agreed but 7.3% disagreed respectively. The high mean of 4.08 suggested that could effectively use online databases such as Academia, ResearchGate, and others to create my research profile for their published articles, books and book chapters. To determine how overall the lecturers rated their perception of the ease of technology applications use, an average index value for all the eleven indicators of construct was calculated. The histogram (Figure 4.14) shows the mean (overall) and normality of the responses.

Figure 4.14

Histogram for the Perceived Ease of Use of Technology Applications

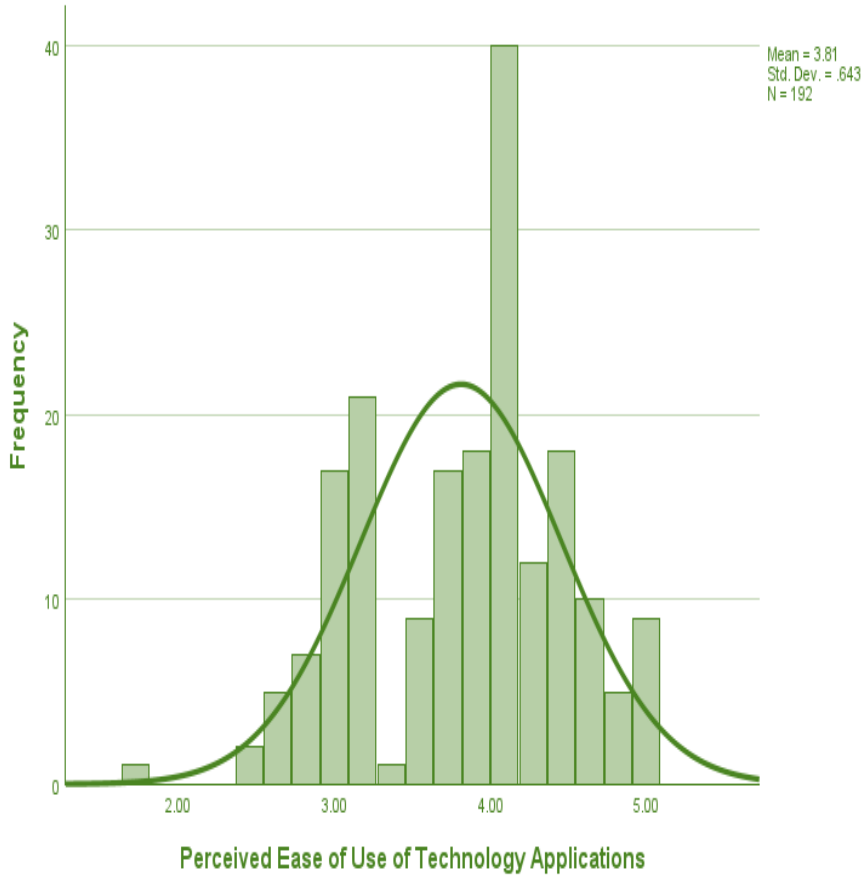


Figure 4.14 presents a mean score (3.81) and a standard deviation (0.643). The high mean suggests that lecturers generally found the use of technology applications in research to be both easy and effective. The relatively low standard deviation indicates normality of the data and supports the conditions necessary for running parametric tests.

4.5.3 Behavioural Intention to Use Technology Applications. Behavioural Intention to use technology applications was the third construct of technology applications use and was studied with eleven indicators as in Table 4.17.

Table 4.17

Descriptive Statistics for Behavioural Intentions to Use Technology Applications

Behavioural Intentions to use Technology Applications		**SD**	**D**	**MA**	**A**	**SA**	**Mean**
I often use technology applications such as Grammarly, quill bot, and plagiarism checker in my research	F %	4 2.1	8 4.2	30 15.6	100 52.1	50 26.0	3.96
I often use technology applications such as advanced searches to carry out extensive literature review	F %	2 1.0	8 4.2	68 35.4	54 29.2	58 30.2	3.83
I often use technology applications such as google forms, monkey survey and others in collecting data	F %	7 3.6	32 16.7	48 25.0	58 30.2	47 24.5	3.55
I often use technology applications such as Excel, Epi Info and others in questionnaire design, data entry and validation, mapping and graphing	F %	11 5.7	8 4.2	40 20.8	75 39.1	58 30.2	3.84
I often use technology applications to apply for ethical approval to a specific Research Ethics Committee	F %	5 2.6	8 4.2	18 9.4	77 40.1	84 43.8	4.18
I often use technology applications such as Paradox, Oracle, Informix, Integral and others to store data	F %	9 4.7	16 8.3	17 8.9	82 42.7	68 35.4	3.96
I often use computer applications such as SAS, SPSS, STATA, SmartPLS, Eviews and others to analyze data	F %	3 1.6	11 5.7	31 16.1	64 33.3	83 43.2	4.11
I often use technology applications such as Nvivo, Atlas Ti, and others in the management and analysis of qualitative data	F %	9 4.7	11 5.7	45 23.4	64 33.3	63 32.8	3.84
I often use computer applications such as Zotero, Mendeley, Endnote and others to carry out citation and referencing	F %	7 3.6	6 3.1	11 5.7	87 45.3	81 42.2	4.19
I often use computer and internet applications to identify credible journals and publishers and to seek guidance in manuscript writing	F %	2 1.0	8 4.2	23 12.0	88 45.8	71 37.0	4.14
I often update my online databases such as Academia, ResearchGate, and and others to share my publish articles, books and book chapters	F %	6 3.1	5 2.6	55 28.6	74 38.5	52 27.1	3.84

The results in Table 4.17 on whether lecturers often used technology applications such as Grammarly, quill bot, google forms and plagiarism checker in their research, cumulatively indicated that the larger proportion (78.1%) agreed, 15.6% moderately agreed but 6.3% disagreed. The high mean (3.96) corresponded to agreed on the likert scale. Therefore, lecturers often used technology applications such as Grammarly, quill bot, google forms and plagiarism checker in their research studies. As to whether lecturers often used technology applications such as advanced searches to carry out extensive literature review, the majority (59.4%) agreed while 35.4% moderately agreed and 5.2% disagreed. The high mean of 3.83 revealed that lecturers often used technology applications such as advanced searches to carry out extensive literature review.

Concerning whether lecturers often used technology applications such as google forms, monkey survey and others in collecting data, the larger percentage (54.7%) agreed, 25.0% moderately agreed but 20.3% disagreed respectively. The high mean of 3.55 suggested that lecturers often used technology applications such as google forms, monkey survey and others in collecting data for their research studies. With respect to whether often used technology applications such as Excel, Epi Info and others in questionnaire design, data entry and validation, data analysis, mapping and graphing, the larger percentage (69.3%) agreed while 20.8% moderately agreed and 9.9% disagreed. The high mean of 3.84 implied that lecturers often used technology applications such as Excel, Epi Info and others in questionnaire design, data entry and validation, data analysis, mapping and graphing.

Regarding whether they often used technology applications to apply for ethical approval to a specific Research Ethics Committee, the larger proportion (83.9%) agreed while 9.4% moderately agreed but 6.8% disagreed. The high mean of 4.18 suggested that the lecturers often used technology applications to apply for ethical approval to a specific Research Ethics

Committee. With regard to whether lecturers often used technology applications such as Paradox, Oracle, Informix, Integral and others to store data, the majority percentage (78.1%) agreed, 8.9% moderately agreed but 13% disagreed. The high mean of 3.96 meant that lecturers often used technology applications such as Paradox, Oracle, Informix, Integral and others to store their research data. Regarding to whether lecturers often use computer applications such as SAS, SPSS, STATA, SmartPLS, Eviews and others to analyze data, the majority percentage (76.5%) agreed while 16.1% moderately agreed but 7.3% disagreed. The high mean of 4.11 meant that lecturers often used computer applications such as SAS, SPSS, STATA, SmartPLS, Eviews and others to analyze their data.

With regard to whether lecturers often used technology applications such as Nvivo, Atlas Ti, and others in the management and analysis of qualitative data, the majority percentage (66.1%) agreed while 23.4% moderately agreed but 10.4% disagreed. The high mean of 3.84 meant that lecturers often used technology applications such as Nvivo, Atlas Ti, and others in the management and analysis of qualitative data. Concerning whether lecturers often use technology applications such as Zotero, Mendeley, Endnote and others to carry out citation and referencing, the majority proportion (87.7%) agreed, 5.7% moderately agreed but 6.7% disagreed. The high mean of 4.19 meant that lecturers often used technology applications such as Zotero, Mendeley, Endnote and others to carry out citation and referencing.

As to whether lecturers often used computer and internet applications to identify credible journals and publishers and sought guidance of manuscript writing, the majority percentage (82.8%) agreed, 12.0% moderately agreed but 5.2% disagreed. The high mean of 4.14 meant that lecturers often used computer and internet applications to identify credible journals and publishers and sought guidance in manuscript writing. With regard to whether lecturers often update their

online databases such as Academia, ResearchGate, and and others and shared their published articles, books and book chapters, the majority percentage (65.6%) agreed, 28.6% moderately agreed but 5.7% disagreed. The high mean of 3.84 meant that lecturers often utilized online databases such as Academia, ResearchGate, and and others to share their published articles, books and book chapters. To determine how overall the lecturers rated their behavioural intention to use technology applications in their research work, an average index value for the eleven indicators of the construct was calculated. The histogram (Figure 4.15) shows the overall mean and normality of data.

Figure 4.15

Histogram for Behavioural Intentions to Use Technology Applications

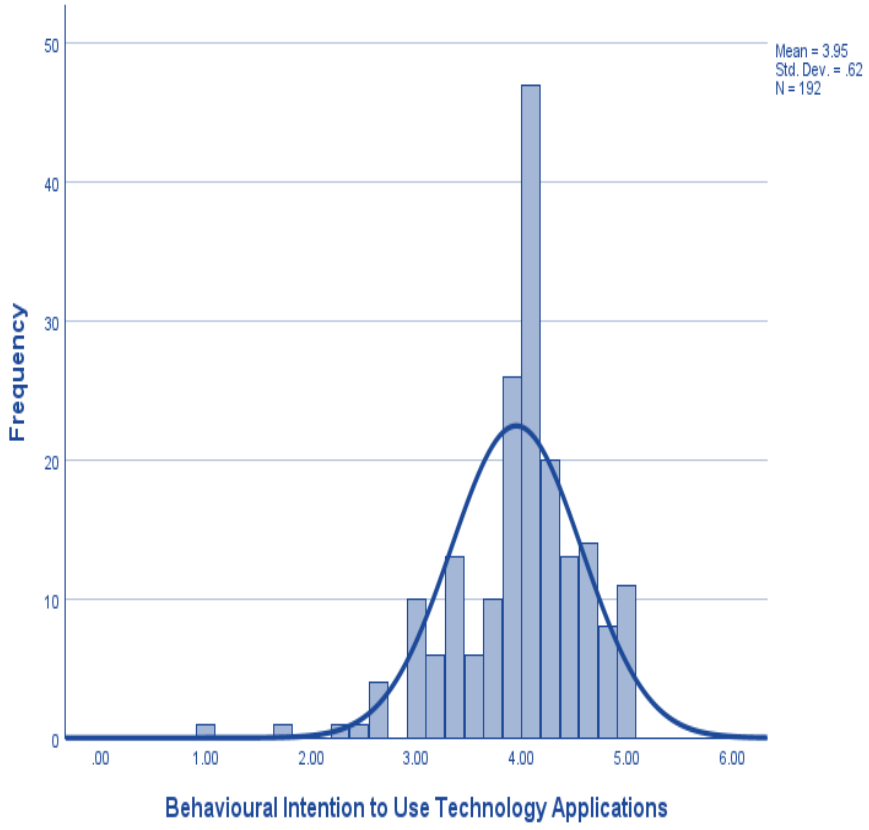
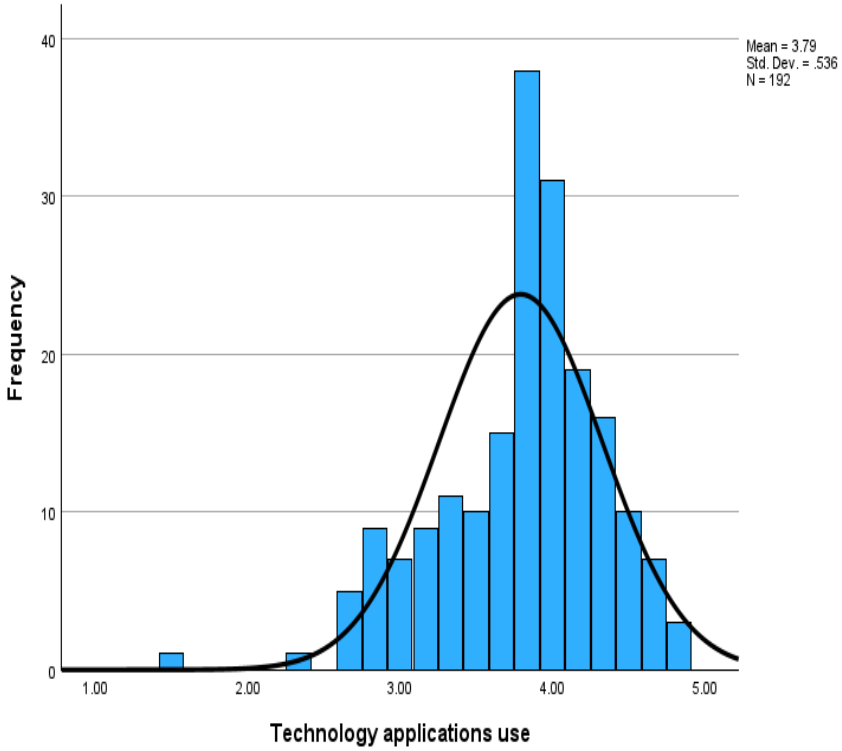


Figure 4.15 indicates a mean score (3.95) and a standard deviation (0.62). The high mean denotes that lecturers reported high level of their regular use of technology applications in their research studies. The low standard deviation reveals the normality of data and its suitablility for linear analysis.

4.5.4 Technology Applications Use. To find out how overall lecturers rated technology applications use in the research studies, an average index value for the all the indicators of three constructs was calculated. The histogram (Figure 4.16) shows the mean (overall) and the normality of the research findings.

Figure 4.16

Histogram for Technology Applications Use

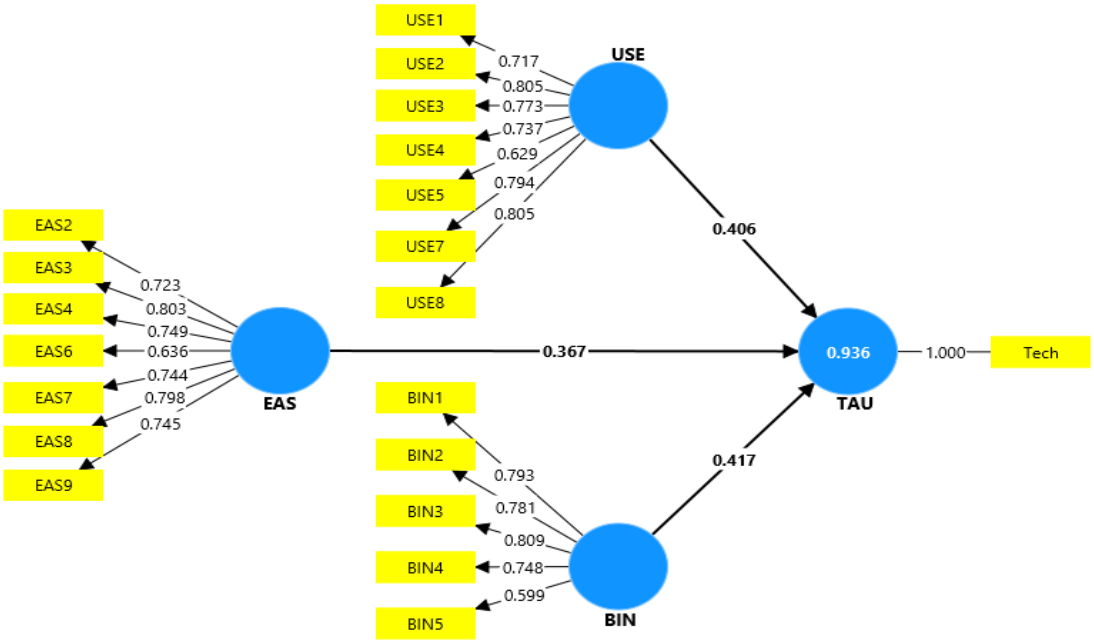


The values in Figure 4.16 indicate a mean (3.79) and standard deviation (0.536) which confirmed the normality of the results. The high mean meant the lecturers rated technology applications use in research as being good while low standard deviation indicated normality of the results. Such values confirmed the parametric condition of normality hence the data was appropriate for linear analysis which was the basis for developing the structural model for technology applications use.

4.5.5 Technology Applications Use Structural Model. A structural equation model was constructed to identify the indicators of technology applications use. Figure 4.17 displays the relevant indicators for the constructs representing this variable.

Figure 4.17

Technology Applications Use Structural Equation Model



The results in Figure 4.17 show that technology applications use covered perceived use, ease of technology use and behavioural intention to use it. Factor loadings show that for perceived use, all the eight indicators were retained (USE1 to-USE8). For perceived ease of technology applications

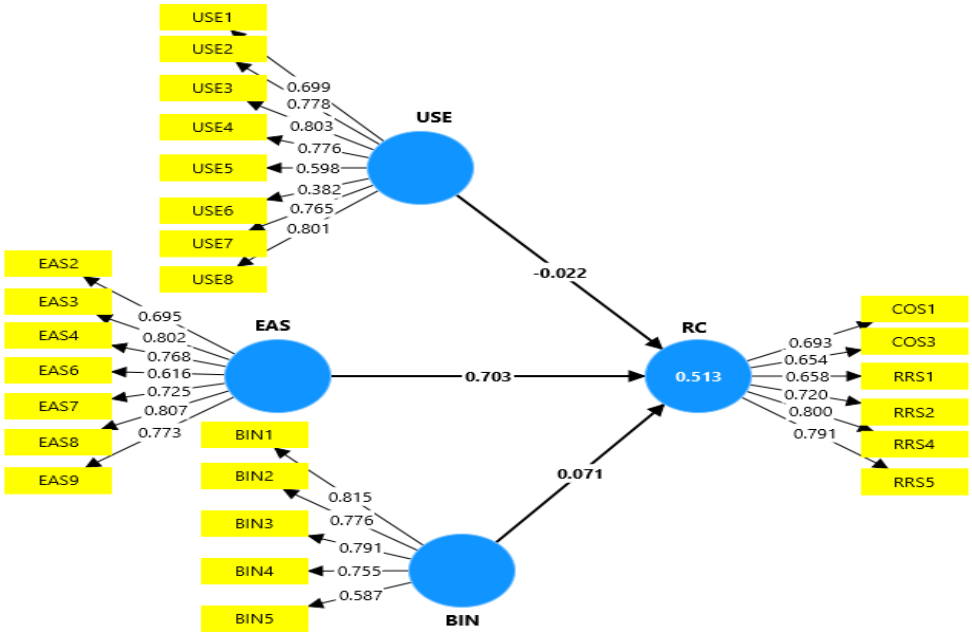
use, seven indicators (EAS2, EAS3, EAS4, EAS6, EAS7, EAS8, and EAS9) were retained out of eleven indicators were retained with 4 indicators (EAS1, EAS5, EAS10 and EAS 11) dropped. For behavioral intention to use technology applications, five indicators (BIN1, BIN2, BIN3, BIN4, and BIN5) were retained out of the eleven indicators with 6 of the indicators (BIN6 to BIN11) left out. The indicators retained showed factor loadings greater than 0.50; the lowest acceptable level (Cheung et al., 2024).

4.5.6 Structural Equation Model for Technology Applications Use and Research Competence.

To assess the influence of technology applications use on the research competence, a structural equation model was developed. Figure 4.18 denotes a structural equation model on the influence of technology applications use on research competence of lecturers of Kyambogo University.

Figure 4.18

Technology Applications Use and Research Competence Structural Equation Model



The structural equation model (Figure 4.18) examining the relationship between technology applications use and lecturers' research competence showed that technology applications use was

represented by three indicators: perceived usefulness of technology, its perceived ease of use, and the behavioural intention to use it. Research competence, in this model, was defined by two components particularly communication skills and research review skills but the rest were excluded. The results of the model in Table 4.18 provide for beta coefficients (β), t-statistics, coefficients of determination; (R^2 and adjusted R^2) and p-values. Three hypotheses were tested to assess whether behavioural intention (H1), perceived ease of technology use (H2) and its perceived usefulness (H3) significantly affected research competence.

Table 4.18

Technology Applications and Research Competence Path Estimates

	β	**T**	**P-Value**
BIN → RC	0.071	1.416	0.157
EAS → RC	0.703	5.046	0.000
USE → RC	-0.022	0.141	0.888
R^2 = 0.513			
R^2 Adjusted = 0.505			

The structural equation model values (Table 4.18) reveal that behavioral intention (β = 0.071, t = 1.416, p = 0.157 > 0.05) had a positive insignificant influence on the research competence of lecturers. However, perceived ease of use (β = 0.703, t = 5.046, p = 0.000 < 0.05) had a positive significant influence on research competence of lecturers while perceived use (β = -0.022, t = 0.141, p = 0.888 > 0.05) had a negative insignificant influence on research competence. In consideration of adjusted R^2 = 0.505, the three constructs of technology applications use contributed 50% of the variation in research competences.

The magnitude of particular betas demonstrated that the perceived ease of use of technology applications had a more significant influence on research competences of lecturers

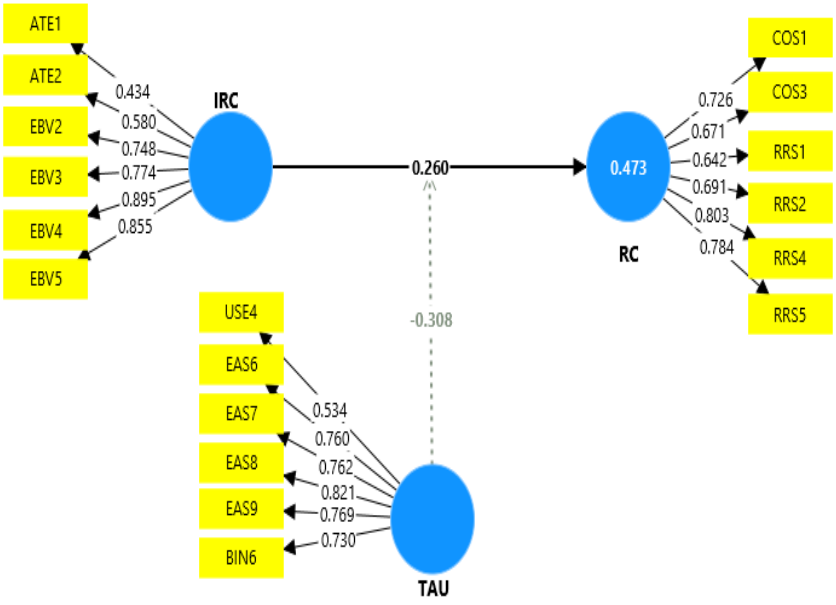
compared to behavioural intention and perceived use respectively. Therefore, perceived ease of use in particular (H_2) had a positive significant influence on research competences while behavioural intentions (H_1) had limited insignificant influence on research competences and perceived use (H_3) had a negative insignificant influence on the research competences. Therefore, H_2 was accepted whereas H_1 and H_3 are rejected.

4.6 Institutional Research Culture on Research Competence Moderated by Technology Applications Use

The third objective investigated technology applications use as a moderator between institutional research culture and the research competences. The research hypothesis tested the moderating effect of technology applications on the influence of institutional research culture on the research competences of lecturers. The structural equation model (Figure 4.19) and the path estimates table (Table 4.19) presents the results.

Figure 4.19

Institutional Research Culture, Technology Applications Use and Research Competence - Structural Equation Model



The structural equation model (Figure 4.16) describes the moderating effect of technology applications use on the effect of institutional research culture on research competence. Accordingly, institutional research culture was measured by two constructs (research artefacts and espoused beliefs and values) while research basic underlying assumptions was dropped. Technology applications use was measured by all its constructs including perceived use, perceived ease of use and behavioural intentions to use technology applications. Research competence was measured by only two of its' constructs which are communication skills and research review skills. The other two which are knowledge of research content and reflective ability were dropped. Table 4.19 denotes the structural equation path estimates for the moderating effect of technology applications on the effect of institutional research culture on research competence.

Table 4.19

Institutional Research Cultute, Technology Applications Use and Research Competence Moderation Path Estimates

	β	**T**	**P-value**
IRC → RC	0.260	3.435	0.001
TAU → RC	0.365	5.628	0.000
TAU x IRC → RC	-0.308	4.365	0.000
R^2 = 0.473			
R^2 Adjusted = 0.465			

The moderation structural equation estimates (Table 4.19) denotes that institutional research culture (β = 0.260, t = 3.435, p = 0.001 < 0.05) had a positive significant influence on research competences. Also, technology applications use (β = 0.365, t = 5.628, p = 0.000 > 0.05) had a positive significant influence on research competence. However, the moderation test results showed that the moderating effect of technology applications use (β = -0.308, t = 4.365, p = 0.000 < 0.05) on the influence of institutional research culture on research competences was negative but

significant. Therefore, technology applications use significantly moderated the influence of institutional research culture on research competences but in a negative direction. This means the hypothesis was rejected. Adjusted R^2 showed that the significant factors in both the independent and moderating variables accounted for 46.5% (R^2 Adjusted = 0.465) of the distinction in research competence of lecturers. The beta values showed that technology applications use was more influencial on the research competences of lecturers compared to institional research culture. Nonetheless, the beta value for the moderating effect of technology application use of the influence of institutional research culture on research competence of lecturers was negative (β = -0.308) hence the hypothesis was rejected.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter gives a discussion the findings and presents the conclusions and recommendations on institutional research culture, technology applications use, and research competence. It also indicates the limitations of the study and proposes potential research questions for future studies. The discussion of the findings was carried out in the context of existing literature.

5.1 Discussion

This section provides a discussion of the study results aligned with the specific objectives. The discussion is informed by a thorough analysis of the data and is contextualized within the existing literature, ensuring a rich understanding of the results and their implications.

5.1.1 Research Competence. Lecturers demonstrated a high level of research competences in terms of research content knowledge, research review skills, and reflective ability. However, their communication skills were average. These results accord with Kasule et al. (2022) who reported in their study that was conducted among lecturers of Kyambogo University that the lecturers' performance particularly in research activities was good except for writing and publishing book chapters and books which were inadequate. These results are further confirmed by a study that was conducted in Ecuador (Eduardo et al., 2024) which revealed that research

competences of lecturers were generally high but the records in terms of scientific production indicated otherwise.

A study by Yulianti et al. (2020) in Indonesia who revealed that whereas lecturers were eager to write scientific papers, a few had succeeded in writing and publishing textbooks. Another study that provided an intervention of developing scholarly writing skills reported that a few lecturers managed to complete the task of writing book drafts. However, the few who completed the assignment were able to publish them with an ISBN (Khaeruman, 2023). On the contrary, a study by Okechukwu et al. (2024) that was conducted among lecturers of Library and Information Science in various institutions in Nigeria reported a greater levels of communication skills including writing and publishing books and books chapters. The difference could be from their target group that was already oriented towards information science and the contextual difference where some institutions across the globe have already attained a high degree of scholarly writing abilities. Given that the majority of the studies are aligned to the findings of this study, the lecturers of Kyambogo University had a high level of research competence but with moderate level of communication skills.

5.1.2 Socio-demographic characteristics and research competence

The study findings indicated no difference in research competences among lecturers of different gender and age. These results agree with a those from a study conducted in private universities in Central region in Uganda which revealed that age of academic staff was not correlated with their productivity (Toriola 2023). The variable of age was also found uncorrelated with research productivity in a study that was conducted in Indonesia by Gunawan, (2020). However, in

Gunawan's study, gender was found to be stastically significantly associated with research productivity of lecturers particularly in publication capacity after three years of exposure.

The difference could be contextual differences that could be linked to acess to capacity building programmes between males and females.

Regarding age groups and research competences. This study indicated that age was not a determinant of research competences among lecturers. This is reinforced by a study conducted in Italy by Abramo, et al. (2016) which found no correlation between age of professors and their research performance abilities. However, lecturers who were more senior in the career and discipline irrespective of their age were more competence in research. The study is further supported by another study that was conducted in Indonesia which reported that age of lecturers was not a determinant of their capacity to publish journal articles and books (Maipita, et al., 2023). Therefore, it can be concluded that indeed age does not determine research competence of lecturers.

Further more, results of this study revealed that the level of education, experience and designation were significantly associated with research competences of lecturers. This is supported by a several studies including; Gunawan, (2020) and silaji & Mohammad (2025). In their study, Silaj and Mohammad reported that demographic chracteristics mainly experience and academic rank significantly influenced academic staff performance and among other subvariables of staff performance of research productivity. Therefore, with reference to the various studies that are in agreement with this study's findings, it can be resolved that designation, experience and education level are associated with research competences that enable contribute to research productivity of lecturers but age and gender are independent of research competences of lecturers.

5.1.3 Institutional Research Culture and Research Competence; The first objective of the study aimed to investigate how institutional research culture influences the research competences of lecturers at Kyambogo University. The hypothesis developed from this objective proposed that institutional research culture had a significant positive impact on lecturers' research competences. The hypothesis test results indicated that the elements of institutional research culture namely research artefacts, espoused beliefs and values, and basic underlying assumptions had a positive significant effect on lecturers' research competences. This outcome aligns with the Theory of Organisational Culture (TOC) by Schein (2004), which underpins this study, suggesting that an institution with a strong culture grounded in a common vision, mission, and established procedures fosters such competencies. Similarly, in a study by Rahman (2024) that was conducted among lecturers in Malaysia, a positive significant influence was noted in the aspect of systemic support to the lecturers' motivation, knowldge and skills to do research.

The findings of this study align well with those of Obliopas et al. (2022), who identified work space conditions as positive interpreters of research competence among research instructors and supervisors in Philippine high schools. These favorable conditions included the availability of adequate and appropriate research infrastructure, support through research funding and seed money, as well as the organization of professional talks and workshops. Instructors also viewed recognition of individuals with outstanding research skills as a key factor in developing research competence. Additionally, collaboration and monitoring were found to influence teachers' research competence. Similarly, Tuan et al. (2022) at Vietnam National University revealed that resource provision and institutional policies were the most significant factors affecting lecturers' research innovations and productivity. These results are aligned to the findings by Kanabi et al. (2022), who

demonstrated that policy support had a significant positive association with research productivity, with research skills being one of its core components. In their study, research policy was rated as moderate with a mean value of 3.07. This suggests that institutions play a vital role in enhancing research competence and productivity among faculty by establishing, communicating, and enforcing clear research guidelines and protocols.

In line with the findings of this study, Putri et al. (2023) found that institutional research culture had a significant impact on the logical publication capacity among lecturers at Telkom University in Indonesia. In a study that was conducted in the province of Albay in Philippines, it was revealed that institutional support impacted research productivity of the faculty members (Onrubia, 2024). In that regard, offering opportunities and holistic research support would enhance the research competences of lecturers.

According to Anamofa et al. (2019) in their study in private institutions in Kopertis Region XII of Indonesia, results revealed that both individual and institutional research culture influence research capacity of lecturers. The individual factor found most significant was the insight of the benefits of research not only to the researcher but also to human life. Institutionally, research infrastructure such as library resources were deemed inadequate and their facilitation would enhance research capacity. In the same vain, Turyahikayo et al. (2024) in their study among faculties in four of the public universities in Uganda reported that institutional culture particularly basic underlying assumptions and espoused beliefs and values had a positive significant impact on institutional effectiveness. Therefore, institutions that have declared values (espoused beliefs and values) such as a shared and acknowledged mission statement, objectives, operational values and whose members' perceptions, thoughts, and behavior are aligned to the espoused beliefs are more likely to meet their performance targets. Tierney and Lanford (2018) highlight that an institution’s

leadership ought to promote and reinforce the mission and values through both written and verbal guidance especially when new members join the institution. Consistent with these earlier findings, institutional research culture has a significant impact on lecturers' research competences.

5.1.4 Technology Applications Use and Research Competence. The second objective of the study assessed the influence of technology applications use on the research competences. The hypothesis derived from this objective was that technology applications use has a significant positive influence on the research competences of lecturers. The hypothesis test results showed that technology applications use particularly the perceived ease of use had a positive significant influence on research competence of lecturers whereas behavioural intention had low but insignificant influence on the research competences of lecturers and their perceived use of technologies had a negative but insignificant influence on the research competences of the lecturers.

This finding partially concurred with the Technology Acceptance Model (TAM) by Davis (1989) which suggests that the acceptance of technology is determined by the perceived usefulness, perceived ease of use which eventually influences behavioural intentions to use the technology. The slight difference in the results of this study and TAM is evidently due to difference in conceptualization whereby TAM focuses on how perceived usefulness will enhance perceived ease of use and eventually yield into behavioural intention to use technology. The study particularly focused on the influence of measurements of TAM on research competence rather than how each construct in TAM influences one another. The results of this study imply that the perceived use of technology applications may not necessarily instigate research competence unless lecturers perceived them as easy to use and actually used them.

The study findings are in agreement with Tahar et al. (2020)'s study which indicated that technology use is determined by numerous factors but majorly on how and when they was used. It emphasizes the aspect of readiness (ease of use) and eventual affect on the intention to use it (behavioural intention). Therefore, if lecturers are effective in using a certain technology in research, they are more likely to use it consistently. However, perceiving it as useful without the ability to use it will not influence competence of its use in various research activities. The finding of the study also concurred with other scholars such as (Tubaishat, 2018) who reported that perceived ease of use was affected by prior experiences in use of computers.

Relatedly, Samuel et al. (2018) revealed that technologies were indispensable tools in academic research but compared to other measurements of technology use, the adequacy of use of technology was rated highest compared to perceived use. Therefore, when lecturers are effective in technology use, there are more likely to use them often. The finding of the study also concurred with Mannan and Maruf, (2023), who reported that perceived ease of use is based on self-efficacy to use technology, and facilitating condition such as high experience and general beliefs regarding technology use but not merely perception of use. This implies that perceived use is not sufficient unless there are enabling conditions both within and without.

Whereas findings of this study indicated lower beta value for perceived use compared to perceived ease of use and behavioural intentions, Hamid et al. (2016) reported different results where perceived usefulness of technologies had a more positive and significant effect compared to perceived ease of use. This difference could be as a result of contextual differences in the study whereby this study focused on how technology use influenced research competence more so among lecturers while the discussed study focused on technology use in e-government sector, a system whose users are likely to receive prior training before it is used because high level of

proficiency is expected. Overall, a number of studies agree with the findings of this study and they generally imply that lecturers may have high level of research competence even when their perception of technology use is negative. Nonetheless, lecturers who had perceive technology application use as seemless of efforts enhanced their research competence the more.

5.1.5 Institutional Research Culture and Research Competence Moderated by Technology Applications Use. The third objective tested the moderating influence of technology applications technology applications use on the influence of institutional research culture on the research competences of lecturers. The hypothesis derived was that technology applications use has a positive significant moderating effect on the influence of institutional research culture on the research competences of lecturers. Hypothesis test showed that technology applications use had a negative but significant moderating effect on the influence of institutional research culture on research competence.

This finding was conflicting with the findings of previous scholars. For example, Boussenna, and El Kharraz (2021) reported a moderating and positive effect of information technology on the strength of the association between knowledge management (research management) and organisational performance which was measured by training, research, publication, and governance of which they all constitute institutional culture. The finding of the study are also contrary to Mudany et al. (2021) who reported that technology positively moderated the relationship between leadership; as aspect of organisational culture and organisational performance. Santoso et al. (2020) too indicated contrary results that capability to use technology moderated the effect to apply it in the publication process of lecturers' publications overall performance. It should be noted that capacity to use technology denotes empowerment and therefore the very specific construct in technology applications use (perceived ease of use) in this

study was found significant. Therefore, there is a slight difference in terms of conceptualization between the discussed study and the study at hand.

In the same vein, Jie (2024)'s study indicated that big data capacities which are a component of technology have a moderating effect on the association between institutional culture and administrative effectiveness in higher education institutions. It should be noted that the contradiction between the results by Jie and this study could be attributed to the specific element of capacity in the moderator which means that the study investigated those with big data capacity and how it influenced institutional culture and administrative effectiveness but not research competence. Accordingly, institutions which are supportive in terms of data-informed decision, innovation and collaboration do benefit from big data analytics capabilities. However, Erdurmazlı (2021) presented a unique argument that information technologies may have an effect on the organisational culture based on the activities, processes and human relations in the organization. This means that, Erdurmazlı, was supportive of this study findings. In this case, it can be deduced that technology applications use has a negative moderating influence of the relationship between institutional research culture and research competence of lecturers.

5.2 Conclusions

The above-mentioned discussion led to the following conclusions on the influence of institutional research culture on research competence of lecturers, moderated by technology applications use.

1. Institutional research culture plays a critical role in promoting the research competence of lecturers. This occurs when institutions offer research artefacts like well-equipped and modern libraries, laboratories, and necessary supplies, along with a supportive work environment that encourages collaboration. It also entails that institutions ensure that the mission statement, goals, objectives and values embrace research. This is also when

lecturers' attitude, perceptions and thoughts towards research activities are positive and they prioritize it among other institutional activities.

2. Technology applications use is very instrumental in facilitating research competences of lecturers but even lecturers who may not embrace technology applications have the capacity to conduct research competently. This is because when lectures are able to use technology applications to conduct research, make presentations at conferences as well as share their publications, it is merely a demonstration of technology applications use but not an indication of high level of competence in research. However, when technology applications such as ChatGPT advanced search applications, and IBM SPSS are applied in the research process, the lecturers' research capacities are enhanced. Therefore, lecturers who perceive technology application as easy to use enhance their research competence further.
3. Technology applications use does not significantly amplify or modify the impact of a supportive research culture on enhancing research competence. This means that the presence or use of technology does not significantly alter the positive relationship between institutional research culture and the enhancement of research competence. Therefore, technology use does not enhance the impact of a research-driven culture on research competence.

5.3 Recommendations

The findings this study led to the following recommendations:

1. Managers in universities ought to nurture a research culture that boosts the research competences of lecturers. The institutions should provide structures and facilitates that

support research activities such as laboratory equipment, libraries, as well as ensuring that working conditions that are favorable for research activities. Institutions should establish structures that promote and enforce research policies, standards and guidelines such as the directorate of research and grants and the institutional review board.

2. The university and other key stakeholders should design interventions for promoting research competence among lecturers with a specific target of junior lecturers whose experience level is below 3 years and those who may fall under the category of teaching assistants. If possible, they should be sponsored to do PhD programmes as a leeway to enhance their research competence.

3. Lecturers should take extra steps beyond perceiving technology applications as useful in research but use them in research activities. This can be achieved by engaging in continuous training in technology applications in genral research activities including; methodological skills, reflective ability and communication skills tailored to research.

4. University managers should adapt more tailored technologies by assessing the specific technological needs of researchers and providing targeted training and resources to ensure that technology complements rather than disrupt the existing research culture. This will ensure that technology boosts research culture in enhancing research competence.

5.4 Limitations and Proposed Future Research Areas

This study makes a noteworthy contribution to the body of knowldge. Nonetheless, the findings also indicate areas for further research. Remarkably, the results showed that technology applications use had a negative but significant moderating relationship between institutional research culture and research competence, contrary to a number of previous studies. This suggests that further investigation is desirable in diverse settings, such as multiple universities in Uganda.

Also, further studies should examine other factors other than those considered in this model such as individual factors of lecturers. Also, among others constructs of technology applications use should be “use” rather than “perceived use” which this study considered. This is because perceived use did not cover whether lecturers used the technology applications or not and this was not sufficient to explain the effect of that part of technology applications use on research competence of lecturers. Further studies could consider a qualitative approach or mixed methods research approach to investigate the experiences of lecturers in as far as conducting research with various technology applications are concerned.

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APPENDICES

Appendix A: Consent Form

I am Atuhaire Shallon, a student pursuing a Master of Education in policy, Planning and Management of Kyambogo University. I am humbly requesting you to be part of this study by fill this questionnaire. The questionnaire aims at collecting data on the study titled: “The Relationship between Institutional Research Culture and Research Competence; The moderating influence of Technology Applications use among Lecturers of Kyambogo University”. You have been selected for this study because of your technical experience and the relevant knowledge on the subject and being a teaching staff at Kyambogo University who are the unit of analysis. The information provided will be strictly for academic purpose and thus will be kept confidential. In case of need for further information regarding this study please contact the principal investigator, Shallon Atuhaire on 0774636127 .

If you agree to participate, acknowledge by signing on this form, which will only be used for this study and nothing else.

Your random number is.....

Sign: ..... Date.....

Appendix B: A Questionnaire for a Postgraduate Student of Kyambogo University; 2022/2023- 2023/2024

Kyambogo University,
P.O. Box 1,
Kyambogo- Uganda,
March 2024.

Dear respondent,

I am Atuhaire Shallon, a student undertakinh a Master of Education in Policy, Planning, and Management degree of Kyambogo University. I am collecting data on "Institutional Research Culture, Technology Applications Use and Research Competence of Lecturers at Kyambogo University". Your input into this study is entirely voluntary and only necessary for compilation of the dissertation. All data provided will be handled with confidentiality and will not endanger you in any way. Thank you for accepting to provide data.

Yours Faithfully,

Shallon Atuhaire

Section A: Background Variables

Please, provide the following information by ticking (✓) the most applicable response about yourself

A1 Gender: 1 = Male ( ) 2 = Female ( )

A2 Age range: 1 = 29 and below ( ) 2 = 30 to 39 ( ) 3= 40 to 49 ( ) 4= 50 and above ( )

A3 Education Level: 1 = Bachelors ( ) 2 = Masters ( ) 3 = PhD ( )

A4 Designation: 1= Teaching assistant ( ) 2= Lecturer ( ) 3= Senior Lecturer ()
4 = Associate professor ( ) 5 = Professor ( )

A5 Marital status: 1 = Married ( ) 2 = Separated ( ) 3 = Divorced ( ) 4 = Single ( )
5= Widowed ( )

A6 Experince: 1 = Less than 3 years ( ) 2 = 3 to 5 years 3 = 5 to 10 years 4 = More than 10 years

Section B: Research Competence (DV)

The variable of research competence will be studied as a multi-dimensional concept covering: content knowledge (COK), research review skills (RRS), methodological skills (MES), reflecting ability (RA), and communication skills (COS). Please, provide your responses on the same based on the questions provided using the scale where 1= Strongly Disagree (SD) 2= Disagree (D) 3= Moderately Agree (MA) 4= Agree (A) 5= Strongly Agree (SA).

COK	**Content Knowledge**	**SD**	**DA**	**MA**	**A**	**SA**
		1	**2**	**3**	**4**	**5**
COK1	I have a clear understanding of the present-day research activities in my academic discipline					
COK2	I am so acquainted with various research methods in my academic discipline					
COK3	I am aware of the historical paradigm changes in my academic discipline					
COK4	My knowledge of research methods and skills is comprehensive.					
COK5	I am aware of the most significant publication channels in my discipline					
COK6	I am aware of the publication ethics in my discipline.					
COK7	I am aware of the ethics that apply to presentations at conferences and colloquims					
RRS	**Research Review Skills**	**SD**	**DA**	**MA**	**A**	**SA**
		1	**2**	**3**	**4**	**5**
RRS1	I can conduct a targeted search of literature					
RRS2	I am aware of where to explore for relevant literature on a specific topic					
RRS3	I can systematically review literauture on a specific topic					
RRS4	Based on existing literature, I am able to identify research gaps					
RRS5	I can do a meta-analytical review					

RRS6	I am familiar with the various review protocols/guidelines in my subject area					
MES	**Methodological skills**	**SD**	**DA**	**MA**	**A**	**SA**
		1	2	3	4	5
MES1	Formulating research questions and hypotheses are hard for me.					
MES2	I am able make decisions on which data answers my research question.					
MES3	I can plan a research project.					
MES4	Initiating and folloiwng research procedures is hard for me.					
MES5	It is hard for me to decide the methods needed to address research questions.					
MES6	I am able to confidently analyse both quailtaive and quantitative data					
MES7	I am able to confidently use diverse softwares such as STATA, and Structural Equation Modeling using SmartPLS to analyse data					
RA	**Reflective ability**	**SD**	**DA**	**MA**	**A**	**SA**
		1	**2**	**3**	**4**	**5**
RRF1	I can sufficiently interpret research findings					
RRF2	I can adequately relate research findings to the exising theories.					
RRF3	I can ably reflect on limitations of various research methodologies					
RRF4	I am able to reflect on the inferences of research findings.					
RRF5	I am able to conduct a discussion on research findings and to tease out the potential implications.					
RRF6	I can ably reflect on the societal and moral implications of a research product.					
COS	**Communication skills**	**SD**	**DA**	**MA**	**A**	**SA**
		1	**2**	**3**	**4**	**5**
COS1	I can write and present research findings at a conference					

COS2	I can write a manuscript following ethical standards.					
COS3	I find it hard to write a research report as it should.					
COS4	I can ably prepare a presentation for colloquium.					
COS5	I can ably present at a scientific meeting					

Section C: Institutional Research Culture (IV)

The variable of Institutional Research Culture will be studied as a multi-dimensional concept covering Artefacts (ATE), Espoused beliefs and values (EBV) and Basic underlying assumptions (BUA). Please, provide your responses on the same based on the questions provided using the scale where 1= Strongly Disagree (SD) 2= Disagree (D) 3= Moderately Agree (MA) 4= Agree (A) 5= Strongly Agree (SA).

ATE	**Research Artefacts**	**SD**	**D**	**MA**	**A**	**SA**
		1	**2**	**3**	**4**	**5**
ATE1	The university has adequate research infrastructure					
ATE2	There is a well-furnished science lab at my university					
ATE3	Laptops/ Computers and other equipment are provided by the university for doing research					
ATE4	The well-equipped digital library in the university provides access to a large repository of information					
ATE5	The university maintains books in the library on the research areas of each faculty					
ATE6	The university provides the free access to various software to be used in research for example data analysis software					
ATE7	The university has plagiarism checking software that is used by lecturers at no cost.					
ATE8	My research output has been displayed in the university repository system					
EBV	**Research Espoused Beliefs and Values**	**SD**	**DA**	**MA**	**A**	**SA**
		1	**2**	**3**	**4**	**5**
EBV1	I am conversant with the research policy					
EBV2	The university research agenda influences my research activities					
EBV3	The research seminars often conducted at my university give me an opportunity to disseminate my research findings					

EBV4	The exchange programmes at my university have enhanced my research competence					
EBV5	Research activities are monitored frequently					
EBV6	The university recognised my research output					
EBV7	The university supports its staff to access external research funding					
EBV8	The university supports its staff to access internal funding for research					
EBV9	I have identified an academic mentor					
EBV10	I have collaborations for research at my university					
BUA	**Research Basic Underlying Assumptions**	**SD**	**DA**	**MA**	**A**	**SA**
		1	**2**	**3**	**4**	**5**
WC1	There are well established research support systems at the university					
WC2	In this university mutual research responsibility and shared objectives are emphasized					
WC3	The University research objectives have been communicated to all staff					
WC4	Staff members are part of research decisions					
WC5	The staff do share their ideas on research					
WC6	There is mutual trust between management and staff					
WC7	There are support mechanism for the staff to participate actively in research					
WC8	The university has put in place mechanism for disseminating research					

SECTION D: Technology Applications Use (MV)

The variable of Technology Applications Use will be studied as a tri-dimensional concept covering Technology Perceived Use (USE), Perceived Ease of Use (EAS), and Behavioural Intention (BIN). Please, provide your responses on the same based on the questions provided using the scale where 1= Strongly Disagree (SD) 2= Disagree (D) 3= Moderately Agree (MA) 4= Agree (A) 5= Strongly Agree (SA).

USE	**Technology Use**	**SD**	**DA**	**MA**	**A**	**SA**
		1	**2**	**3**	**4**	**5**
USE1	Computer and internet applications such as artificial intelligence (AI), Grammarly, quill bolt, google forms, and plagiarism checker have been useful to me during my research processes					
USE2	The Online sources such as Scopus, African Journals Online, Google Scholar, PubMed, Embase, PsycINFO, and others are useful in carrying out extensive literature review.					

USE3	I find computer and internet applications such as google forms, monkey survey and other useful in collecting data for my research					
USE4	I find computer application such as Excel, Ipi Info and others useful in questionnaire design, data entry and validation, data analysis, mapping and graphing, and creation of reports.					
USE5	I find computer and internet applications useful in the application for ethical approval to a specific Institutional Review Board or Research Ethics Committee					
USE6	I find computer applications such as Access, Integral and others useful storing data					
USE7	Computer application such as SAS, SPSS, STATA, SmartPLS, Eviews, Nvivo, Atlas Ti and others useful to me when analyzing data					
USE9	Computer applications (such as Zotero, Mendeley, Endnote, and others are useful to me in carry out citation and referencing					
USE11	I find online e-resources such as online journals and publishers' websites useful in giving clear guidance to manuscript writing and dissemination of results					
USE12	Online databases such as Academia, ResearchGate and others are useful in keeping and updating research profile of my published articles, books and book chapters in terms of reads, citations and the h-impact					
EAS	**Perceived Ease of Use**	**SD**	**DA**	**MA**	**A**	**SA**
		1	**2**	**3**	**4**	**5**
EAS1	I find computer and internet applications such as Grammarly, quill bolt, google forms, plagiarism checker very easy to use during my research					
EAS2	I can very easily use computer and technology application such as Scopus, African Journals Online, Google Scholar, PubMed, Embase, PsycINFO, and others in carrying out extensive literature review.					
EAS3	I effectively use computer and internet applications such as google forms, monkey survey and others in collecting data for my research					
EAS4	I effectively use computer application such as Excel, Ipi Info and others in questionnaire design, data entry and validation, data analysis, mapping and graphing, and creation of reports.					

EASE5	I effectively use computer and internet applications in the application for ethical approval to a specific Institutional Review Board or Research Ethics Committee					
EAS6	I effectively use computer applications such as Paradox, Oracle, Informix, Integral and others to store research data					
EAS7	I effectively use computer application such as SAS, SPSS, STATA, SmartPLS, Eviews and others when analyzing data.					
EAS8	I effectively use computer application such as Nvivo, Atlas Ti and others in the management and analysis of qualitative data					
EAS9	I effectively use Computer applications such as Zotero, Mendeley, Endnote, and others in carry out citation and referencing					
EAS10	I effectively use computer and internet applications to identify credible journals and publishers' and to seek guidance in manuscript writing and disseminating results					
EAS11	I effectively use online databases such as Academia, ResearchGate and others to create my research profile of my published articles, books and book chapters					
BIN	**Behavioural Intentions**	**SD**	**DA**	**MA**	**A**	**SA**
		1	**2**	**3**	**4**	**5**
BIN1	I often use computer and internet applications such as Grammarly, quill bolt, google forms, plagiarism checker during my research process					
BIN2	I often use computer and technology application such as advanced searches beyond a search in Google to carry out extensive literature review.					
BIN3	I often use computer and internet applications such as google forms, monkey survey and others in collecting data					
BIN4	I often use computer application such as Excel, Ipi Info and others in questionnaire design, data entry and validation, data analysis, mapping and graphing, and creation of reports.					
BIN5	I often use computer and internet applications to apply for ethical approval to a specific Institutional Review Board or Research Ethics Committee					
BIN6	I often use computer applications such as Access, Oracle, Sybase, Ingres, Informix, Unify and others to store research data					

BIN7	I often use computer application such as SAS, SPSS, STATA, SmartPLS, Eviews and others to analyse data.					
BIN8	I often use computer application such as Nvivo, Atlas Ti and others in the management and analysis of qualitative data					
BIN9	I often use Computer applications such as Zotero, Mendeley, Endnote, and others in carry out citation and referencing					
BIN10	I often use computer and internet applications to identify credible journals and publishers' and to seek guidance in manuscript writing and disseminating results					
BIN11	I update my online databases such as Academia, ResearchGate and others every time I publish an articles, books and book chapters					

Appendix C: Field Introductory Letter

KYAMBOGO UNIVERSITY
P. O. BOX 1 KYAMBOGO
Tel: 041 - 4286792 Fax: 256-41-220464
Website :www.kyu.ac.ug Email: drgt@kyu.ac.ug
Directorate of Research and Graduate Training
Office of the Director

APPENDIX 8: INTRODUCTORY LETTER

Date: 07/10/2024

TO WHOM IT MAY CONCERN

RE: SHALLON ATUHAIRE

Dear Sir/Madam,

This is to introduce to you the above named student Reg: No **22/U/GMED/088/PE** pursuing Master of Education in Policy, Planning and Management, Department of Educational Planning and Management, Kyambogo University.

She intends to carry out research on ***"Institutional Research Culture, Technology Applications Use and Research Competence of Lecturers of Kyambogo University"*** in partial fulfillment of the requirements of the award of Master of Education in Policy, Planning and Management of Kyambogo University.

The purpose of this letter therefore is to request you to grant her permission to carry out her study in your institution.

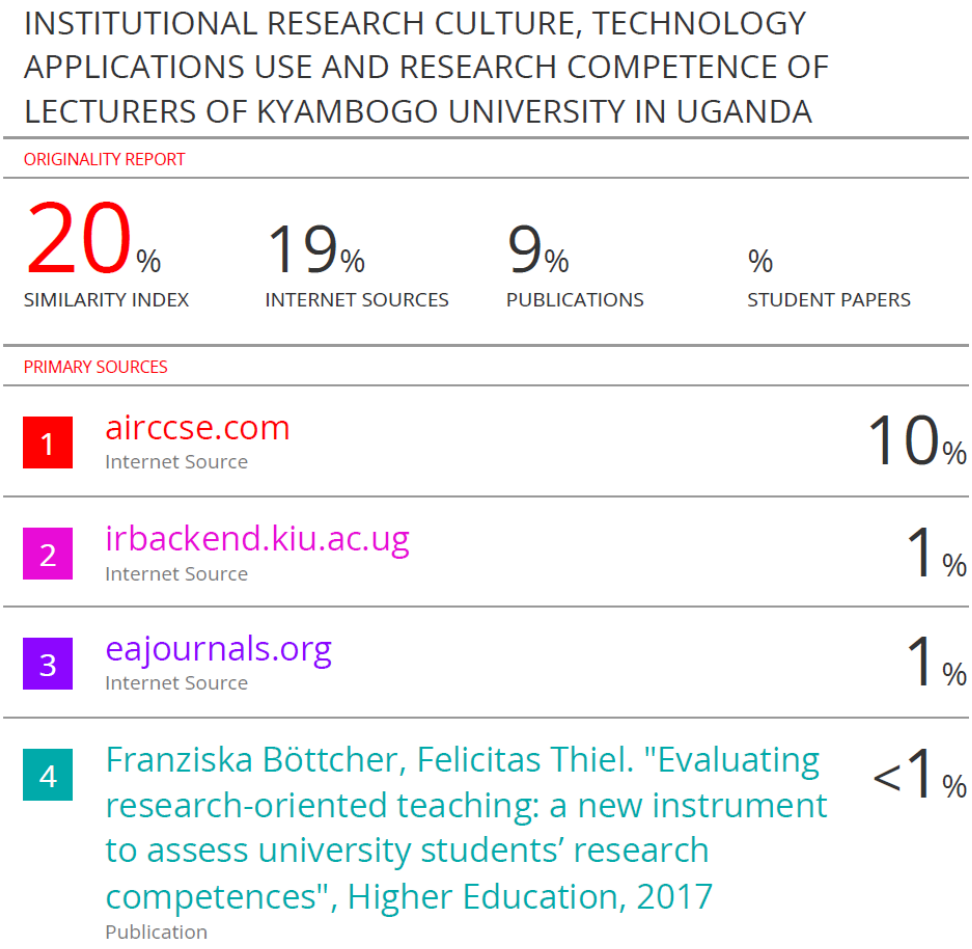
Any assistance rendered to her will be highly appreciated.

Yours sincerely,

Prof. Bosco Bua
AG. DIRECTOR

KYAMBOGO UNIVERSITY
★ 07 OCT 2024 ★
DIRECTOR
DIRECTORATE OF RESEARCH AND GRADUATE TRAINING

Appendix D: Similarity Index



INSTITUTIONAL RESEARCH CULTURE, TECHNOLOGY APPLICATIONS USE AND RESEARCH COMPETENCE OF LECTURERS OF KYAMBOGO UNIVERSITY IN UGANDA

ORIGINALITY REPORT

20%	19%	9%	%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	airccse.com Internet Source	10%
2	irbackend.kiu.ac.ug Internet Source	1%
3	eajournals.org Internet Source	1%
4	Franziska Böttcher, Felicitas Thiel. "Evaluating research-oriented teaching: a new instrument to assess university students' research competences", Higher Education, 2017 Publication	<1%